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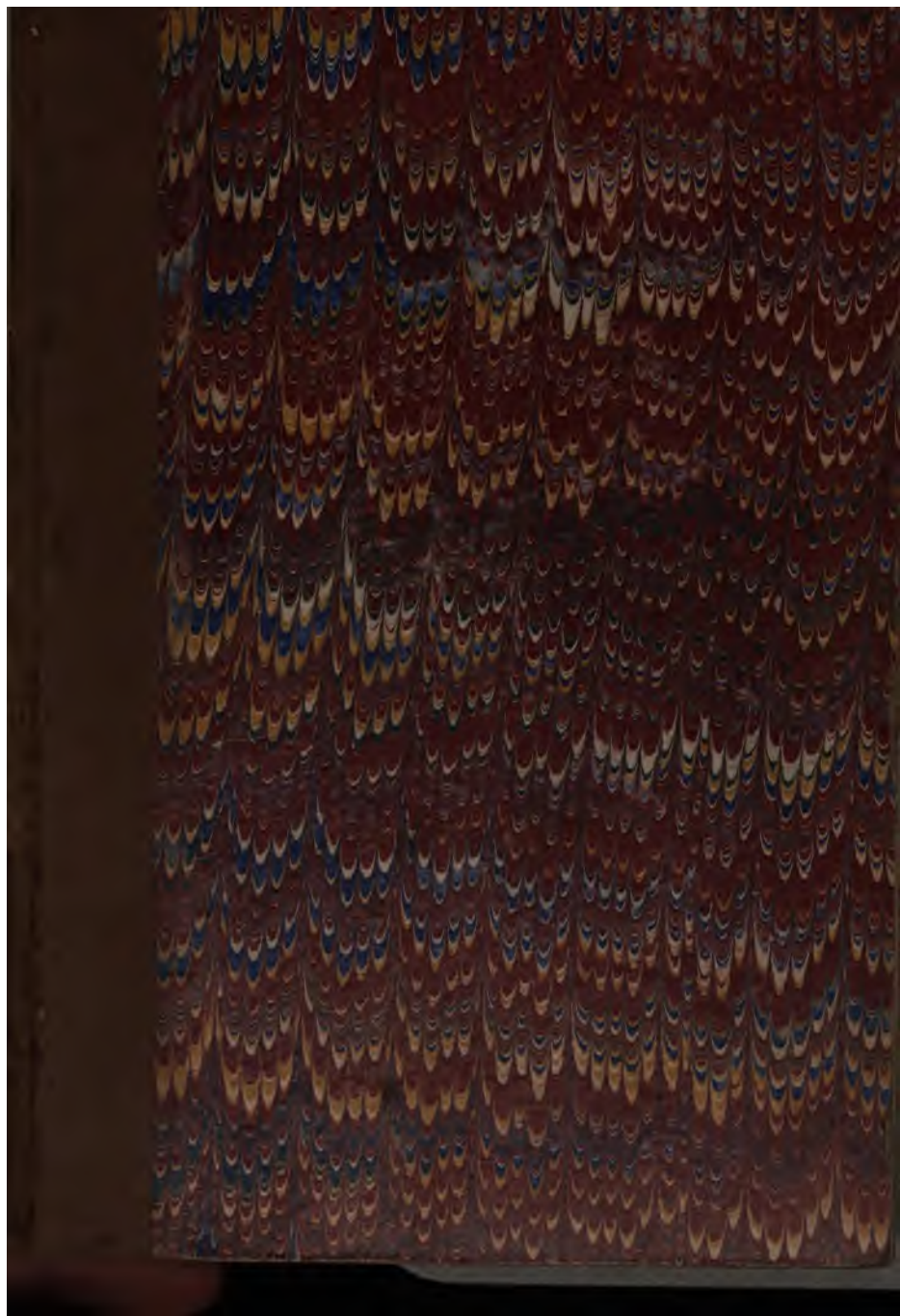
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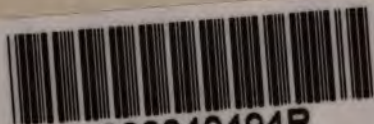
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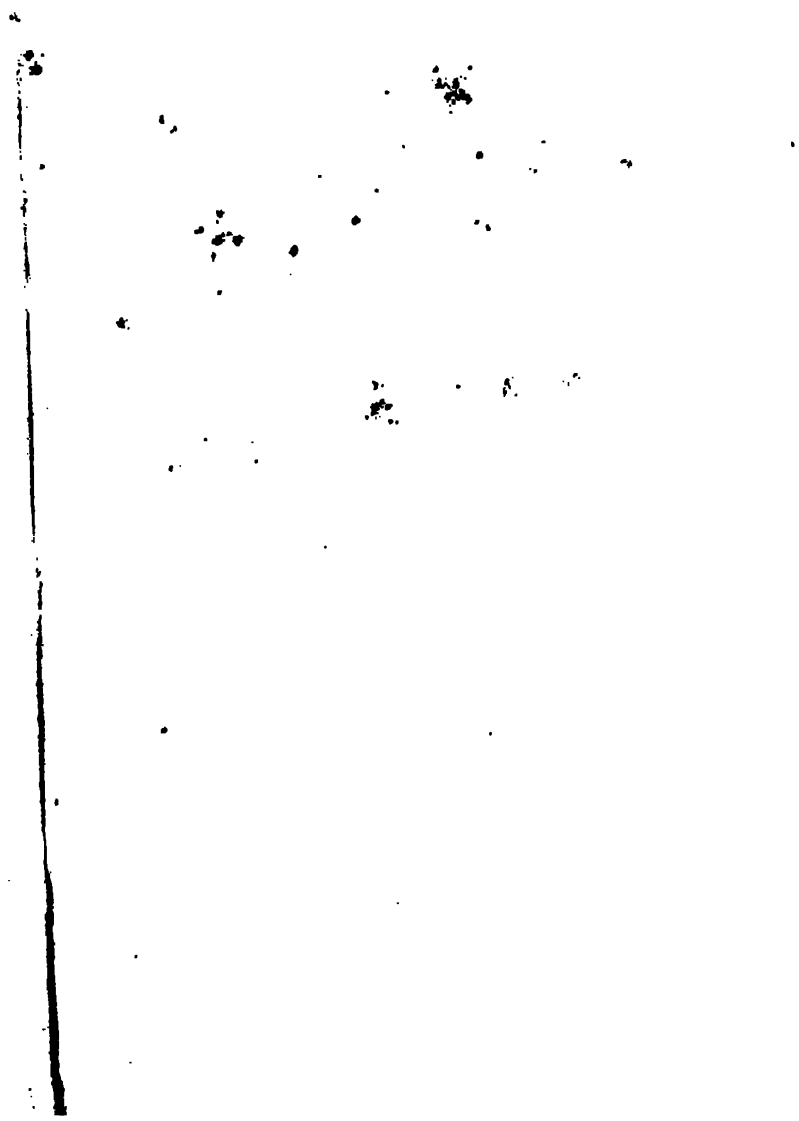


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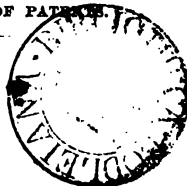
Specifications

RELATING TO

SKINS, HIDES, AND LEATHER.

A.D. 1627-1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS



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P R E F A C E.

THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent, and be supplied in future editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

The present series comprises abridgments of specifications relating to tanning, shaving, splitting, cutting, hardening, dyeing and colouring, preserving, and water-proofing skins and leather. Inventions for gilding and embossing leather ; for treating and dressing skins with the hair on ; and machines for cutting the hair from skins are also included. The inventions relating to the manufacture of boots and shoes ; to the sewing or uniting of pieces of leather ; to the manufacture of leather cloth or imitation leather ; and to the tanning of ropes and cordage, canvas and other fabrics are excluded.

The Abridgments marked thus (* *) in the following pages were prepared for another series or class, and have been transferred therefrom to this volume.

B. WOODCROFT.

April, 1872.

INDEX OF NAMES.

[The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

	Page		Page
Abel, C. D.....	312	Beaux, E. S.....	284
—, F. A.....	288	<i>Beaux, E. S.....</i>	286
Adams, R.....	43	<i>Bel, A.....</i>	289, 301
<i>Adams, W.....</i>	279	Belford, A. E. L.....	137
<i>Adler, A.....</i>	266	Béliard, A. S.....	196
Allison, S. S.....	131	Bell, A.....	54
—, W.....	19	Bellamy, J.....	13
Alphay, G.....	26	Bernard, J.....	111, 118, 164
Anderton, J. J.....	254	Bethell, J.....	65
<i>Armstrong, J.....</i>	198	Bevington, R.....	33
Arrieta, J. T. de.....	229	—, S.....	33
<i>Artus bros.....</i>	156	Bielefeld, C. F.....	96
Ashmore, T.....	44	Bigliand, E.....	190
Ashton, S.....	13	Birdsall, J.....	246
Ashworth, H.....	187	—, T.....	246
Assanti, D.....	128	Böhm, P. A. F.....	175
<i>Autier, F. V. A.....</i>	278	<i>Bock, H. de.....</i>	123
Ayckbourn, F.....	120	Boët, E. C.....	261
		Bombail, L.....	292
Bagnall, J.....	24	Bonneville, H. A.....	293
Balley, W.....	309	Bost, R.....	203
Baillic, J. M. J.....	205	Bordier, J.....	79
Bainbridge, J.....	48	<i>Bout, A.....</i>	218
Baird, J.....	187	Bourgeois, A.....	177
<i>Baud, V. P. C.....</i>	256	Bousfield, G. T.....	135, 147, 295,
Baring, J.....	50		308
Barnard, D.....	167	Boyd, I. H.....	155
Barnwell, S.....	220	<i>Boyer, P. F. J.....</i>	270
Barry, R.....	2	<i>Bray, J. E.....</i>	216
Bartholomew, G.....	174	<i>Bréal, J.....</i>	312
<i>Bassano, Prince de.....</i>	255	Browin, F.....	21, 26, 59, 66
<i>Basset, A. J.....</i>	232	Brierley, J. H.....	164
Baxter, C. F.....	311	Brookes, S.....	36
Bayley, T.....	269	Brooman, R. A.....	171, 174, 195,
Beamish, J. O'M.....	161		210, 226, 232, 253, 266, 268,
<i>Beaudet, L. A.....</i>	239		271
<i>Beaudet, L. A.....</i>	255	Brown, J. H.....	300

	Page		Page
Bugg, F. J.....	273	Crowley, T.....	8, 9
Bull, J.....	10	Cuerton, R.....	70
Burnett, Sir W.....	71		
Butlin, W.....	253		
		Davies, G.....	180, 262, 279
Cæsar, C. de.....	302, 307	Davis, J.....	304
Caillaud, J. M. L.....	172	Davison, R.....	86
Calvert, F. C.....	108	Dean, J.....	74
Cant, J.....	28	De Arrieta, J. J.....	229
Capello, A.....	258, 264	De Bock, H.....	123
Carton, J.....	300	Debous, F.....	241
Cederborg, A.....	18	De Cæsar, C.....	302, 307
Chapa, J.....	224, 234	De Chavanon, D. E. E. A.....	164
Chaplin, F.....	61	De Clippè, C.....	177
Chapman, T.....	20	De la Peyrouse, L.....	247
Chaumont, P. D.....	132	Denny, J.....	241
Chavanon, D. E. E. A. de.....	164	De Schelestadt, E. L.....	77
Chouillou, C. M.....	160	Desmond, W.....	15
Choumert, G.....	9	Deutsche, C. E.....	81
Chrysel, C. L.....	4	Devos, F.....	146
Clark, W.....	191, 194, 208, 212, 230, 270, 271, 279, 284, 285, 313	Dietz, A.....	221, 222
Clarkson, T. C.....	100	Dietzenbacher, L.....	279
Claus, C.....	144	Dinsmore, D. C.....	215
——, C. F.....	208	Doley, C.....	190
Clayton, T.....	169	Dollier Frères.....	174
Clifton, H. E.....	287	Doty, H. H.....	290
Clippè, C. de.....	177	Doughty, R.....	2
Cluderay, W. S.....	295	Dowling, J.....	117
Clunan, J.....	298	Drake, W.....	54
Coëz, E. D.....	290	Ducommun, J.....	285
Colombier, R. J. Comte de.....	90	Duesbury, W.....	50
Conyers, W.....	246	Duhousset, J. D.....	226
Coopman, G. L. P.....	218	Dumas, P.....	293
Cornides, L.....	139, 162	Duncan, J.....	98
Corry, J. B.....	122	Dunseith, S.....	227
——, J. R.....	122	Duval, L. F.....	239
Coulon, F. J.....	192	Duxbury, H.....	51
Cox, G.....	85, 91	Dyer, J. C.....	39, 41, 315
——, J.....	78, 85, 91		
——, J. F.....	63	Eason, J.....	198, 206, 209
——, S. F.....	153, 225, 252	East, F. W.....	105
——, W. H.....	62, 283	Eaton, R.....	268
Cronier, P. N.....	69	Edmonds, T.....	57
Crosby, J. B.....	144	Eggleson, T. G.....	217
Cross, R.....	17	Ellen, S.....	98
Crosse, A.....	101	Ellis, J.....	34
		Elmer, W.....	250
		Fairman, H. W.....	47

INDEX OF NAMES.

vii

	Page		Page
Fanchawe, H. R.	76	Harvey, J.	14
Fauler, A. L. A.	191, 194	Hawkes, G.	15
Favrel, A. F. J.	135	Haines, M. J.	101
Fay, A.	11	Haynes, W.	248
Fearne, C.	6	Hayter, W.	4
Fell, G.	248	Hebert, L.	35
Féraud, V. M.	201	Henderson, A. C.	246
Ferrari, T.	2	Hendryoka, H.	207
Fitcher, E.	311	Henry, M.	184, 189, 214, 255, 270
Flanders, J. F.	235	Henson, H. H.	191
Fletcher, H.	49	—, W. F.	191
Forster, T.	86	Henton, C. J.	303
Francis, W.	106	—, N.	303
Friedel, J. D.	137	Herspath, W.	63
Froggart, R. B.	113	Hitchcock, J.	23
Fryer, D.	193	Hoby, W.	262
Funcke, C. F. P.	152	Hoffmann, P. P.	160
Furnival, J.	75	Holmes, T.	233
		—, W.	193
Gadol, P. N.	138	Hooper, J.	166
Gale, F.	312	—, M.	11
Galloway, A.	34	Honell, J.	124
Garrett, N.	124	Houbigant, A.	189, 214
Gedde, W. E.	289, 301	Houbigant, Messrs. Vassaux	188
Gibson, W.	294	Houchin, R.	176
Gibson, A. H. van.	305	Howard, G.	1
Gilbee, H.	267	Hughes, E. J.	167
Gill, R.	48	—, E. T.	305
Gillet, T. F.	310	Humphreys, H.	200
Girard, M. G.	192	Hunt, C.	1
Godoy, M. L.	255		
Goud, W.	46	Ingham, W.	306
Gorrill, B.	224		
Gray, J.	6	Jacquemart, F. G.	52
Green, R.	3	Jacut, H. P.	210
Gregg, G.	199, 207	Jefferson, T.	34
Guligues, E.	89	Jennings, F. M.	124
		Jennings, H. G.	104, 179, 227, 251
Hall, J. H.	69	Job, A. M.	145
Harner, H.	200	Johnson, J.	6
Harnsher, J.	169	—, J. H.	132, 134, 156, 227, 234, 260
Hancock, C.	201	—, J. R.	212
—, T.	52, 82	Johnston, W.	123, 204
Hanks, J.	107		
Hankinson, C.	42		
Harris, W.	100, 222, 294		
Hart, W. H.	42		
Harton, G.	283		

	Page		Page
Jones, S. T.....	62	Macrum, J. M.....	306
——, T.....	3	Mahieux, A.....	300
Jonquet, D.....	95	Magen, H.....	133
Jullien, A.....	279	Magnant, C. E.....	119
Jullien, E.....	228	Magneval, C. G. M.....	230
Keasley, T.....	90	——, C. M. G.....	180
Keene, C.....	71	Mallory, J.....	40
Keiller, W.....	185	Maltby, W.....	70
Keily, J.....	281	Mansell, T.....	316
Kemp, F. J.....	278	Marchant, G.....	5
——, H.....	214, 278	Margueritte, L. J. F.....	208
Kendall, G. F.....	155	Markindale, R. S.....	140
Kendrick, W.....	46	Martin, F.....	196
Kennedy, D.....	127	Martin, T.....	27
Kenyon, H.....	175	Martz, W.....	212, 284
Knapp, F.....	238	Mathews, T.....	2
Knoderer, C. C.....	148, 169	Medlock, H.....	309
Knowles, J.....	20	Mell, J.....	2
Knowlys, T. J.....	50	Ménard, A. F.....	231, 236
Labrousse, T.....	281	Mennons, M. A. F.....	195, 241
Laçaze, E.....	224, 234	Mercer, J.....	183, 198
Lafone, H.....	172	Merrian, M. H.....	144
La Forge, S.....	216	Merwin, J.....	216
Lamaille, P. J.....	116	Meyer, F.....	103
Larbalestier, I.....	86	——, J.....	233
Larnaudès, J. F. V.....	172	Meyers, J.....	184
Laureau, L.....	206, 256, 263	Michel, A. F.....	268
Lawrence, J.....	28	Millar, J.....	28
Laycock, G.....	113	Miller, J. W. M.....	292
Leach, A.....	207	Mills, J.....	47
Lee, J.....	272, 275	Moiroux, J. E.....	251
Lees, S.....	189	Molac, R. de K.....	137
Le Grand, G. M.....	154	Moline, J. S.....	43
Le Gros, T.....	2	Mollersten, C. F.....	31
Lemaire, E. V. F.....	126	Montier, J.....	279
Lenz, G. F.....	24, 25	Moody, A.....	43
Lichtenstadt, D.....	167	Morgan, J.....	258
Lies-Bodart, J. P.....	271	Moride, E.....	116
Lightfoot, B. H.....	262	Mossman, W.....	200
Lippmann, I.....	136, 139, 141, 142	Mountford, G.....	310
Lister, S. C.....	190	Mouren, J.....	253
Lloyd, E.....	263	Murphy, J.....	16
Loversidge, G. L.....	310	Nash, M.....	9
Lucet, J. B.....	202	Neilson, J.....	45
Lufkin, A. D.....	216	Neumann, J. P.....	56
Lutereau, A. A.....	185	Newbery, G. J.....	80
		Newberry, W.....	34

INDEX OF NAMES.

ix

	Page		Page
Newton, A. V.....	102, 129, 248	Rattray, W.....	227
——, W. E.....	148, 169, 180,	Redrich, R.....	3
186, 206, 216, 217, 250, 256,		Rehn, T. A.....	231, 236
263, 294, 297, 302		Repelin, L. J.....	213
Nickols, D.....	211	Revera, J. W.....	38
Nightingale, N.....	238	Rick, O.....	134
Nisbett, J.....	81	Richard, F.....	206
Nossiter, C.....	87	Richards, J. A.....	145
Noyes, S. B.....	295	Richardson, T.....	29
		Riddle, A. E.....	155
Obert, L. H.....	214	Rimmel, E.....	133
O'Byrne, M. W.....	117	Ripley, A.....	178, 181, 201
Oldfield, J.....	178	Roberts, O.....	201
		Robinson, C. L.....	217
Page, M. W.....	308	Rocher, L.....	210
Pannifex, E.....	284	Rochette, A. P.....	173
Pannifex, F.....	286	Rollason, A.....	220
Parkes, A.....	157	Ronald, J.....	268
Parr, W.....	33	Roxière, C.....	304
Patten, A.....	42	Ruck, W. D.....	155
Patterson, W.....	58		
Paulmier, A.....	205	Safford, J. A.....	248
Payrae, P. U.....	249	Salisbury, E.....	223
Peal, S.....	12	Samuel, S.....	7
Pegg, J.....	107	Sautelet, E. C. F.....	149
Perkes, S.....	117	Schelestadt, E. L. de.....	77
Peyrouse, L. de la.....	247	Schroth, C.....	64, 65, 67
Pfanhansen, F.....	280	Serruys, F. M. A.....	123
Picard, B.....	271	Sharp, T.....	274
Pichon, P. A. T.....	168	Shaw, A.....	193, 206
Piedalla, J. F.....	313	Shepley, G.....	8
Pingree, S. W.....	302	Siever, R. W.....	58
Pitt, R.....	211, 225	Silver, S. W.....	281
Plant, F.....	56	Simonds, W. A.....	130
Pochin, H. D.....	138	Skinner, C. R.....	159
Poncelet, L.....	267	Slater, J.....	49
Pontifex, W.....	66	Smith, T.....	176
Poole, M.....	67, 72, 129	——, W.....	279
Powers, W.....	5	Snyder, S.....	94
Prask, A. G.....	216	Sonnenschein, F. L.....	233
Preller, C. A.....	114, 158	Sorel, S. T. M.....	317
Prior, E.....	22	Soupart, L. A.....	240
Pullman, J.....	124	Sourzac, L. G.....	292
Pyke, J.....	106	Spilsbury, F. G.....	47
		Squire, T.....	89, 140
Radley, W.....	103	Stanley, R. J.....	33
Raper, N.....	64	Stansbury, C. F.....	144
——, T. N.....	66, 68	Stear, J.....	225, 233

	Page		Page
Stenhouse, J.....	244, 245, 277	Vavasseur, J.....	220
Sterlingue, E.....	77, 161	Vernet, L.....	101
Stevens, C.....	218, 224, 234	Vero, J.....	229
Stones, W. B.....	106		
Suarez, C. G., Baron de.....	66	Wadsworth, J.....	270
Sutton, W.....	2	Walker, J.....	26
Swan, J. W.....	314	Walmsley, J.....	55
Sweetser, S.....	130	Walsh, S.....	154
Sylvanus, G.....	2	Warburton, J.....	190
Symington, W.....	86	Ward, W. H.....	208
		Warden, W.....	12
Tallent, T. E.....	204, 257	Warington, R.....	75, 97
Tanner, C.....	45	Warmont, V. E.....	125
——, W.....	115	Warriner, G.....	162
Taylor, J.....	126	Watlington, J.....	3
——, W. G.....	183, 194	Watt, T. L. C.....	193
Terry, C.....	56	Watts, J.....	19
Thennemans, S.....	2	Webster, W. H. B.....	72
Theroulde, F. A.....	141	Weekes, J.....	22
Thirion, P.....	93	Welch, F. I.....	82
Thomas, P. E.....	226	Welsford, E.....	203
Tomlinson, E.....	145	Westhead, J. P.....	60
Tooth, A.....	143	Wetterstedt, Baron C.....	50
Towers, W. H.....	298	Whinery, R.....	121
Tucker, J.....	14	Whitehead, F.....	163
Turnbull, A.....	87	Whiteman, E.....	143
Turner, G.....	257	Whiting, M.....	152
——, H.....	132	Wilkins, E.....	92
Turney, E.....	299	Wilkinson, W.....	190
——, J.....	299	Wilcox, R.....	30, 32, 37
——, J. junr.....	282	Wilson, J.....	273
Tussaud, F. C.....	234	——, R.....	77, 133
——, J. R.....	234	——, R. junr.....	195
Tyler, J. H.....	288	——, R. senr.....	195
Tyzacke, J.....	1, 2	——, W.....	157
		Winter, J.....	64
Van Gieson, A. H.....	305	Wolfen, J. J.....	1
Varicas, R.....	68, 70	Wood, G.....	282
Varillat, J. J.....	104	Worms, A.....	279
——, W. J. J.....	109, 154	Worrall, J. H.....	260
Vasserot, C. F.....	202	——, T. H.....	190
Vasseur, J. B.....	189, 214	Wright, C.....	97
Vasseurs, Messrs. et Houbigant,	188	——, J.....	182, 184
Vaucher, E.....	270	——, W.....	84
Vaurymenant, J. B.....	261	Wurtz, H.....	279

INTRODUCTION.

THE skins of animals were no doubt from a very early period used for many purposes. They were easily obtained, and suitable as material for bedding, clothing, and many articles of general use. It may be that * Beckman's conjecture is right, that in the warmer countries and in the plains matted leaves and rushes were used instead of skins for clothing, but in the more mountainous and colder districts the necessity for animal food would be greater, and the colder climate would require warmer clothing.

We have no means now of ascertaining at what period the art of removing the hair and wool and manufacturing a fabric from them was first acquired,† but the art was known in the valley of the Tigris and the Euphrates before the date which any of our histories reach. ‡ Goguet has plausibly conjectured that the earliest fabrics were felted and not woven. But before long the invention of the distaff and the loom again revolutionized the manufacture. Already in the books of Genesis § and Job || the distaff and the loom are well known and used in familiar illustration. Abraham refuses to take anything from the King of Sodom, "from a thread even to a shoe-latchet;" and the author of the Book of Job writes, "My days are swifter than a weaver's shuttle."

It was long, however, before the inventions perfected in the plains reached the scattered tribes of the colder mountainous districts, and longer still before the sheep bred in the hot plains of Africa or Mesopotamia could be acclimatized to colder countries. Meanwhile, among these remote tribes, skin dresses remained in use, and necessity must have taught some method of preparation. The use of skins beyond the limits of higher civilization was very general. We are told by Herodotus,¶ that the tribes by the Caspian sea clothed themselves in seal skins. Strabo remarks

* Beckman, *Hist. In.*, v. 2, 297.

† Gen., c. 31, v. 19.

‡ Goguet, *L'Origine des Loix*, &c., v. 1, pt. 1, bk. 2, p. 114.

§ Gen., c. xiv., v. 23.

|| Job, c. vii., v. 6.

¶ *Hdt.*, iv., 71.

on the fur dresses of the Massagetæ, and Cæsar and Tacitus mention the reindeer clothing of the German tribes. So general was their use among the less civilized tribes, that "skin-dressed" was used by classical authors as descriptive of the savage.*

Gradually, as the circle of civilization widened, the use of woven fabrics advanced with it, and displaced the old skin dresses. Pausanias remarks, that the Locri Ozolæ wore skins "because they had not learned to weave;"† and Tacitus‡ calls attention to the fact that the use of skins and furs by the Germans was dying out before the advancing civilization of Rome. The time was, however, then approaching in which the fur dresses which had been stigmatized as the sign of barbarism were to return into use as rare and costly luxuries.

The use of skins and furs for making and ornamenting dresses seems to have begun to come into fashion at Rome about the second or third century of the Christian Era. Before that time the sheep-skin jackets of the peasants, and leathern jerkins of the soldiers are mentioned, but we find no trace of the use of skins or furs generally among the people, and no signs of their being objects of luxury to the rich. Neither Suetonius, Martial, nor Juvenal, mention them at all, nor does Pliny (except in one doubtful passage), though the subject would have come within the scope of his work. But the numerous northern tribes, who were then advancing southwards, were clothed in skins and furs. These must have been suitably prepared and worn with some taste, as we find that the Romans soon adopted, to a great extent, the dress of their conquerors. The furs so recently despised became fashionable, and were eagerly sought after. The fashion daily gaining ground was forbidden by clergy and legislators, as an extravagant luxury, and bitterly denounced by the patriots who saw in it a second triumph of the barbarian. Claudian§ exclaimed that Rufinus was not ashamed to wear a Getic dress: Tertullian|| inveighed against the use of furs in his fiery language, and Honorius forbade it under heavy penalties. But the renewal, in succeeding years, of the same laws, with heavier penalties, proves the attempt at legislative interference to have failed to check the current of fashion.

* Propertius *Eleg.*, iv., 1, 12.

† Pausanias, x., 33, p. 685.

‡ *Tac. Germ.*, 17.

§ Claudian, *In Ruf.* 2, 83.

|| *De Habitu Muliebri*, c. 1, p. 551.

" When fur dresses became fashionable in Italy, they were soon spread all over Europe. At first the best indigenous furs were employed, but afterwards those of foreign countries, as being superior; and the dearer they were the more they were esteemed. At every court they furnished the State costume of the reigning family, and in a little time that of the richest nobility. In particular, the mantle, '*cottesd'armes*,' of the knights which they drew over their cuirass or harness was bordered with the costliest furs. It had no sleeves, and resembled the dress of ceremony worn by our heralds. On this account, it is well known, ermine and other kinds of fur became parts of the oldest coats of arms. Sometimes magnificence, in this respect, was carried to such an extravagant length, that moralists declaimed against it, while governments endeavoured to limit the use of furs by law, and the clergy to prohibit them entirely. Many kinds were obtained only by the principal nobility, and others were forbidden."

Charlemagne reproved his courtiers for wearing costly foreign furs; the Council of London (A.D. 1127) forbade the use of them by the clergy. Philip II. of France, and Richard I. of England, on undertaking a crusade, resolved that they would wear no ermine, sable, or other costly fur; and in the reign of Edward III. it was enacted in England that no one should wear furs whose annual expenditure did not amount to at least one hundred pounds.† In Germany, the citizens were allowed only such furs as were suitable to their rank and means.

The more skins were used merely as matter of ornament in dress the more the use became limited to the smaller furs. The trade so created opened the northern parts of Europe to Italy, extended itself to Siberia after the fifteenth century, and was diverted into a new channel by the settlement of Canada. Since that date a large quantity of furs have been obtained from the northern parts of America, and London has become the headquarters of the fur trade. In 1670, the Hudson's Bay Company was formed under a Charter of Charles II., with the exclusive privilege of trading with the Indians. But the Charter never having been confirmed by Parliament independent traders spread over the country, and in 1787 were united in one body, under the name of the North West Company. The rivalry of the two Companies led to constant collisions, and at length, in 1821, they united, under

* Decker, *Hist. III.*, 11, 519.

† 11 Ed. III. c. 5.

the name of the Hudson's Bay Fur Company. In 1868, the rights and territory of the Company were ceded to the Crown, and the territory, under the name of Rupert's Land, admitted into the confederation of British North America.

What was the preparation to which skins were submitted for their preservation we have no means of accurately ascertaining, but they must at a very early period have been subjected to some process to prevent putrefaction. And though advancing civilization very soon superseded their use for clothing, hides and skins were at an early age, and have since been, continuously employed for articles which must have been made of a material capable to a greater or less degree of keeping out water. It is some time before the word leather is found in the Bible,* but in earlier passages where the word skin is used leather is obviously meant.

The art of tanning is conjectured to be of Oriental origin, and not only the high civilization of the countries, but the early celebrity of Babylonian and Persian dyed leather give plausibility to the conjecture. It is strengthened, too, by the fact that among these nations, and those brought (like the Jews) into immediate contact with them, we find skins used for purposes which show they must have been rendered insoluble, long before we find them used for similar purposes in other countries.

From the accounts given by travellers of the method employed by the North American Indians, Greenlanders, and Icelanders, in the preparation of skins,† Goguet has made several ingenious conjectures as to the manner in which the art of tanning may have been first discovered. Maceration in water for the purpose of depilation seems to be common to all these tribes; indeed, as Fosbrooke observes, the natural process of depilation in the case of drowned animals would suggest maceration, while considering the number of vegetables that contain tannin, it is not at all improbable that the art of tanning might be accidentally discovered during that process.

However discovered, it was undoubtedly known at a very early period, and the knowledge of it spread over the whole world. The Romans imported the fine-dyed leather of Babylonia and Persia,§ and even the ordinary tanned hides of Pontus. They received tribute in hides from the northern German tribes, and

* 2 Kings, c. 1, v. 8.

† *Goguet, Origine des Lois*, &c., v. 1, pt. 1, bk. 2, p. 114.

‡ *Ency. of Ants.*, 1, 520.

§ *Ammian, Marcell, Lib. v.*, 41.

acquired the art of tanning at a very late date. Yet in the time of Pliny, at least, they knew the ordinary processes of the art. The peculiar properties of the astringent vegetable matter we call tannin, and the fixing of colours by mordants were at that time, at all events, matters of familiar knowledge. Pliny mentions alum, gall-nuts, the bark of the* pomegranate and lotus (*Faba græca*), the roots of the wild vine,† and the leaves of the sumach as used in the preparation of leather. So well known indeed were the peculiar qualities of the sumach that from its use in the preparation of leather it received the distinguishing name of *Rhus coriaria*.§ The number of uses to which leather has been put has stimulated its manufacture, but till very recent times little had been done to improve the process of producing it. Its preparation in a rude manner has been known from the earliest times, but it was not till the beginning of the present century that it began to be manufactured on sound principles, in consequence of the researches of Desyeux, Seguin, Macbride, and Davy. How it has since progressed, and the improvements which have been introduced, will be found in the following pages.

* Pliny, H. N., Lib., xvi., c. 53.

† Pliny, H. N., Lib. xvii., c. 54.

‡ Fosbrooke, Ency. Ant., v. 1, 489.

§ Pliny, H. N., Lib., xxvii., 53.

SKINS, HIDES, AND LEATHER.

A.D. 1627, December 8.—N^o 40.

WOLFEN, JOHN JACPER.—"A newe invencon for the making
" and pparing of otaine stuffs and skynns to hould out wett and
" rayne."

[No Specification enrolled. Letters Patent printed, price 4d.]

A.D. 1638, July 17.—N^o 118.

HUNT, CHRISTOPHER.—"Newe invention by way of 'ymbro-
" dering or huffing of guilded leather upon several grounds fitt
" for hangings or other furniture for houses."

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1660, October 27.—N^o 130.

HOWARD, CHARLES.—"A newe way for the tanning, tawing,
" dressing, & pparing all sorts of rawe hydes and skinner into
" leather, in lesse time and with lesse charge then formerly hath
" bin used."

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1691, August 22.—N^o 271.

TYZACKE, JOHN.—"A way by an engine to be worked by one
" or more men for the well and more easy cyling and dressing of
" leather and cloath," which may be also "applicable to the rais-
" ing of water, washing of cloathes, milling of sugar canes,
" pounding of mineralls, and pounding and bruising of all sorts
" of seeds, pounding of charcoale to make powder of, pound-
" ing and making raggs fitt to make paper and the like."

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1691, September 15.—N^o 275.

SUTTON, WILLIAM.—"A new and extraordinary art or invention of ordering all sorts of linnen and woollen cloathes and other manufactures thereof, and all sorts of stufes, silks, hatts, and leather, soe as to make them hold out water, and alsoe for preventing of woollen cloathes, manufactures, and hatts from moths and mill dewe."

[No Specification enrolled. Letters Patent printed, 4*d*.]

A.D. 1692, March 18.—N^o 309.

DOUGHTY, ROBERT, TYZACKE, JOHN, LE GROS, TOBIAS, BARRY, RICHARD, and MELL, JAMES.—"Tanning all sorts of skinns for leather, without makeing vse of the ingredients now vsed for tanning of leather, and alsoe for conventing some sorts of the said leather in imitaçion, and with the same tincture, grain, and smell of Rushia leather."

[No Specification enrolled. Letters Patent printed, 4*d*.]

A.D. 1693, April 22.—N^o 322.

SYLVANUS, GEORGE.—"A new and extraordinary mixture of wax and other ingredients knowne by the name of the German balls, which are of great use for beautifying and preserving any sort of leather, and being used for coaches will preserve the same much better and longer than anything now used, and prevent any wett entring into bootes and shooes."

[No Specification enrolled. Letters Patent printed, 4*d*.]

A.D. 1694, October 17.—N^o 336.

THENNEMANS, SIMON.—"How to print upon oyl cloath, as also upon all sorts of leather, gold and silver flowers, and other figures in all sorts of colours, which said flowers and figures so printed will endure wett and dry weather, and will last as long as the stuffe itselfe."

[No Specification enrolled. Letters Patent printed, 4*d*. No Drawings.]

A.D. 1695, December 14.—N^o 346.

MATTHEWS, THOMAS, and FERRERS, THOMAS.—"A new invention for damasking, striking, and fixing of colours into

“ leather and all sorts of stuffs, clothes, and velvets, and haire
“ on both sides, and alsoe the makeing of tapestry with program,
“ yarne.”

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1721, September 9.—N^o 436.

WATLINGTON, JOHN,—“ A new engine for the better and
“ more expeditious cutting the wooll from beaver, coney, and
“ hare skins, in order to make hats.”

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1724, January 28.—N^o 461.

REDRICH, ROBERT, and JONES, THOMAS.—“ A new art or
“ method, as well for staining, vaining, spotting, clouding, dam-
“ asking, or otherwise imitating the various kindes of marble,
“ porphiry, and other rich stones and tortoisshell on wood, stone,
“ and earthenware, and all and every such goods, wares, utensils,
“ and things as are cut, made, or fashioned thereout, as for the
“ making, marbling, veining, spotting, staining, clouding, and
“ damasking any linnen, silks, canvas, paper, and leather.”

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1753, March 30.—N^o 679.

GREEN, RADCLIFFE.—An “ art and method of dying and stain-
“ ing leather.” The skins, apparently goat skins, are steeped in
water for four or five days, and then placed into pits with lime
until the hair comes off. They are then put into bran, and
are afterwards “ put into figgs, and remain in them four to
“ five days,” after which they are dyed with the following in-
gredients :—For reds or scarlet, “ for each skin one quarter of an
“ ounce of cochnele, and one ounce of Brazil wood, and one-
“ eight part of an ounce of Seville grains made into powder.”
These are put into two quarts of water and boiled, and the skins
are run through the liquid when in a warm state as often as may
be required. They are then cured in galls, dried, and thinned on
the flesh side. The grain is opened by rubbing with a smooth
board. For the yellows :—“ For twelve to sixteen skins take two
“ pounds of Brazil wood, and one pound of what is called ocke

“ in Portugal, a yellow earth.” These are put into four quarts of water, and the mixture is warmed and then allowed to settle for two or three days. It is applied to the skin with a brush. The skin must be cured before the dye is put on.

For the orange :—“ For twelve to sixteen skins, according to their bigness, is put in about four quarts of water, one pound of gum arabic, and half a pound of safflors. These ingredients must be in fusion two or three days in a pint of water, and then afterwards put into and boiled over a gentle fire till such time as the substance of the safflors is extracted; and after the skin is prepared, the same to be observed as the above.”

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 127.]

A.D. 1759, January 24.—N° 735.

CHRYSEL, CHRISTOPHER LEBRECHT.—“ A new invention of taking off wool from sheep skins, preferable to that now practised by rotting and lime.” This is effected by “ a perfect and fixed alkaline salt, whose nature and quality will cause an ebullition and effervescence with acids, and turn the blue juice of violets into a green colour, otherwise it cannot be a perfect and fixed alkaline salt. This kind of salt is named pearl ashes or pott ashes, sal tartari, sal vegetabile, Spanish soda, sandeva, English kelp, and many others.”

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 157.]

A.D. 1761, February 5.—N° 758.

HAYTER, WILLIAM.—A “ new composition & peculiar method for staining of leather.” The skins being dried and brushed clean are wetted or washed with five liquors in the following order :—

1. With a liquor “ prepared with oak sawdust and pomgranate shell ” mixed with acid wine drawn from the lees lukewarm.
2. With a strong logwood liquor mixed with a little of the former.
3. With a liquor of boiled galls and a little pearl ashes.
4. With a tincture of steel mixed with the last-mentioned liquor.

5. With the same quickened with fustick and copperas with a little verdigrise in white wine vinegar.

The skins are then washed, dried, and brushed.

[Printed, 4^{to}. No Drawings. See Rolla Chapel Reports, 6th Report, p. 181.]

A.D. 1768, February 29.—N^o 893.

MARCHANT, GNOMON.—"Making and milling of raw hides " and skins, to answer the purposes of leather." Oak bark, or any other bark, or wood or vegetable is boiled in water, or has water or "weak ouse" poured hot upon it. This produces an "ouse" which is put into vats, and into this ouse as soon as it is cold the hides, having been first haired, are placed, and must then be "constantly kept turning and repeatedly taken out and " put in again." Or the hides with the ouse made very strong may be put in a large cask like a hogshead, and kept constantly turning; or they may be put into "stocks the same as used in "milling of oyled buck, sheep, or other white leather." "Also "when the hydes and skins are thus milled and soaked in fresh "strong ouse they are to be laid under a pressure to squeeze "the water out of the same, leaving thereby only the salts and "essence" of the tanning material.

[Printed, 4^{to}. No Drawings.]

A.D. 1768, April 16.—N^o 900.

POWERS, WILLIAM.—A method "of splitting and dividing "sheep's pelts, lamb pelts, and other skins, so as to render the "grain or upper part thereof more useful for binding of books "and other purposes of trade, and at the same time preserving "the under part of the said pelts and skins in full goodness to "be wrought into leather." The skin, which should be a large sheep or lamb skin of a hollow texture, after liming is soaked in warm water. A beam is provided made of a round piece of soft wood, with a flat upper surface seven or eight inches wide. The skin is fastened to the beam so that one half lies close on the flat surface of the beam, and is then rubbed with bran. "A sharp "knife must then be provided, something like a frizing knife, "but made straight, and with this the operator must begin at the "upper end of his beam," "and cut through the grain," "pressing "hard upon the surface with a steady hand and short transverse

"strokes," as far as he can reach from the end of the beam, after which he can stand by side of it, and cut the skin to its extremity. The other half of the skin is split on the flat surface in a similar manner.

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 135.]

A.D. 1770, January 25.—N^o 951.

FEARNE, CHARLES, and GRAY, JAMES. — "A method of "dying paper, card paper, and white leather, on the grain side, of "various colours, different in quality, superior in many respects "to any hitherto used for those purposes." The colours are produced as follows :—Reds by a tincture of carmine or of cochineal and madder, or of "cochineal heightened by a solution of tin," or a decoction of Brazil and alum in malt liquor. Blue from a solution of Indigo in oil of vitriol. Green by mixture of blue with any yellow tincture. Black from blue with a "tincture of "galls, sumac, and campeachy wood, stricken black by tincture "of steel or *sal martis*." The colours are applied in the following manner :—The leather, with its grain side on the liquor, is dipped in a flat pan as often as necessary. When dry it is washed with soap and water and rubbed with dry flannel. The leather dyed black is oiled before it is washed.

There are further directions as to the colours to be used for paper, and the method of applying them.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 9, p. 387.]

A.D. 1770, May 23.—N^o 958.

JOHNSON, JOHN. — "A new method of tanning leather." Seven pounds of spirit of vitriol, or of spirit of sea salt, or aquafortis, the vitriol being preferred by the patentee, are mixed in a vat with five barrels of water. Hides intended for sole leather are placed in this, and "if kept with handling and shifting" "will be compleatly wrought in twenty-four hours." After this the hides are laid away with bark, and treated in the usual way until they come to the second layer of bark; vitriol, or spirit of sea salt, or aquafortis, vitriol being preferred, is then put into the "vatt" (tan pit) in the proportion of seven or ten pounds of the spirit to fifteen bushels of bark, and fourteen barrels of woode, this being sufficient to tan fifteen sole hides.

After ten or twelve weeks in this layer the hides are put into a third layer prepared as above, and weakened by tanning one set of hides.

For crop hides seven pounds of spirit of vitriol, or spirit of sea salt or aquafortis, vitriol being preferred, are placed in a handler that will contain fifteen hides. This hides are placed in the handler with dust or bark as in the ordinary way, and handled two or three times a day for seven or eight days. They are then tanned in the usual way, until the last layer, when seven or ten pounds of spirit as above are put into the vat for every forty hides. Calf skins are tanned in the usual way, except in the last layer, where the same quantity of spirit is put in for twelve dozen calf skins as for forty hides.

[Printed, 4*l*. No Drawings. See Repertory of Arts, vol. 8. p. 19.]

A.D. 1771, November 2.—N^o 998.

SAMUEL, SAM.—"A new method of dying and staining goat skins, kid, calf skins, sheep skins, lamb skins, and hides of all sorts, in the following colours (to wit):—In lobster red, rose red, scarlet, crimson, and morocco; in light green, gay green, laurel green, molequin green, deep green, caladon green, parrot green, duckwing green, Saxon green, sea green, pea green, cabbage green, and grass green; in milk blue, pearl blue, pale blue, flat blue, midling blue, sky blue, king's blue, queen's blue, Turkish blue, and purple blue; in straw yellow, pale yellow, lemon yellow, and orange yellow; and in chocolate colour and coffee colour."

The invention consists in the use of the following ingredients:—For the reds, cochineal boiled in water, and if that is not sufficient, carmine, and if that does not answer, sea lake, drop lake and aquafortis. The carmine is not to be used for crimson. For the greens, Spanish indigo, aquafortis, spirits of salt and vitriol, and if this is not sufficient, Barbary root and turmeric. For the blues, Spanish indigo, aquafortis, spirits of salt and vitriol. Different shades can be given by the use of a small quantity of urine. For straw yellow, ground fustic boiled in water. For pale yellow, Barbary root; for lemon yellow, Barbary root and French berries. For orange yellow, French berries and turmeric. For chocolate colour, ground logwood and grama tartar. For

coffee colour, ground logwood and "roch allum," and if that is not sufficient, spirits and urine and aquafortis, with a small quantity of pewter in them.

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 138.]

A.D. 1774, June 27.—N° 1074.

SHEPLEY, GEORGE.—"New invention and discovery of grinding or reducing to powder bark for tanning leather and Brazil wood, logwood, fustick, madder, indigo, saltpetre, and all other woods, drugs, roots, minerals, and colours used in dying, by certain millstones of a particular form and construction placed horizontally, and worked with wind or water." The upper stone is cut into a concavity beginning about a foot, more or less according to the size of the stone, from the edge. The lower, or bedstone, is flat and steadily fixed. The wooden box in the centre of the bedstone, through which an ordinary iron spindle passes, is made convex, and on it are fixed several flat pieces of iron or other metal, shaped like knives, "which by the circular motion of the upper stone, will direct the bark or other substances to be ground from the concave parts of the upper millstone to the sides or edges of the said stones where the same are to be ground and reduced to powder."

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 162.]

A.D. 1777, April 26.—N° 1153.

CROWLEY, THOMAS.—"A certain engine or machine, consisting of divers parts, to be applied and used for splitting, cutting, paring, shreading, or dividing hides, skins, and leather in length and breadth, severing the flesh side from the grain side, parting the whole substance into two or more different divisions, and also for cutting, sawing, splitting, or dividing, after the like form and method, wood, cork, bone, horn, ivory, or other substances which may be required to be cutt, sawed, split, or divided in length and breadth." Two machines are described.

In the first the leather is (apparently) drawn through an opening between two blocks of wood fixed on a frame. A knife working backwards and forwards is set in or over this opening,

and the leather as it is drawn up is pressed by a board, which brings the edge of the leather against the knife, by which the leather is split.

In the second machine a knife placed across a table is made to work to and fro across the table by a wheel pinion and crank, the blade of the knife being parallel to the surface of the table. The leather is fastened down on a plank or stone, which is drawn along the table under the knife, so that the knife comes against the edge of the leather and splits it in its passage.

The description of the first of these machines is very obscure.

[Printed, *not* Drawing.]

A.D. 1783, July 26.—N° 1380.

CROWLEY, THOMAS.—A "new constructed engine to cut, split, and divide asunder the flesh side from the grain side of hides, skins, and leather, and to sever those substances in length and breadth, into as many divisions as are serviceable and as need may require."

[No Specification enrolled.]

A.D. 1783, August 7.—N° 1382.

CHOUMERT, GUONON.—"A machine for the cutting, splitting, and dividing hides and skins, as well in the pelt before dressed, as when dressed into leather, severing the grain side from the flesh side." "The substance to be divided" passes between two rollers, and in doing so is brought against a knife which can be adjusted by wheels and screws, and to which a motion to and fro is given by a balance beam. The substance (hide) is divided by this knife, and is held during its passage by pincers attached to a transverse chain revolving round two rollers placed beneath the first mentioned rollers.

[Printed, *not* Drawing. See Repertory of Arts, vol. 4, p. 104.]

A.D. 1784, March 10.—N° 1421.

NASH, MICHAEL.—"Making blacking which effectually resists moisture, prevents all kinds of leather from growing rusty or mouldy, and preserves it from the pernicious effects of salt water."

This blacking is made of equal quantities of spermaceti, clarified mutton suet, and fine beeswax, with half the quantity of fine Venice turpentine, boiled together. To these is added half a pint of Japan black for every pound of spermaceti used, and a quantity of spirits of turpentine in which a little rosin has been dissolved, equal to one-eighth of the quantity of Japan black, and a quantity of finely levigated ivory black equal to half the quantity of Japan black. This composition is boiled till perfectly clear from scum, and when cold is made into cakes or sticks. If kept in thin cakes, and exposed to the air for two years, it may be reduced into powder, which dissolved in oil makes a liquid blacking.

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 168.]

A.D. 1786, January 31.—N° 1526.

BULL, JOHN.—“ A machine for the purpose of pareing, pumming, friezing, and grounding of leather used in the manufaturing of gloves, breeches, and shoes, and for binding of books, and for cutting out of shoes, slippers, gloves, mitts, and muffs, and for embellishing the same with ornaments in gold, silver, and colours.” A set of paring cylinders on which are fixed pumice stone, pulverized glass, or paring knives, according to the size and quality of the skin to be pared, pummed, &c., are set vertically in a large circular frame. They are caused to revolve by pinions on their upper axes, which pinions work in the teeth of a large cog wheel revolving over the frame. Between each of these cylinders is set a pair of rollers which run on moveable centres, so that they can be brought as close together as may be desired. The extremities of the skins to be pared, &c., are placed between these rollers, so that the skins are “suspended and strained” over the revolving paring cylinders.

For engraving, a roller press is used, consisting of two rollers, one over the other; between these an endless flannel band passes, which is held stretched by a small leaden roller beneath. The leather to be engraved is placed on the flannel, and over the leather is placed the engraved plate on which color has previously been put in the usual way. The upper roller is then caused to revolve by putting into gear a pinion bar and cog wheel, connecting the roller with the large cog wheel over the circular frame, and the flannel, the leather, and the plate are drawn forward, and pass between the rollers.

For cutting, a cutting frame is used, on the surface of which is nailed a piece of wood of the shape of a shoe, glove, &c. Round this piece of wood knives are placed, and are made fast by wedges and by pieces of wood fixed in the frame. The leather intended to be cut is placed on a flat surface. The cutting frame with the knives fixed is placed over the leather and pressed down by a screw press.

[Printed, 1s. Drawing. See Rolls Chapel Reports, 6th Report, p. 178.]

A.D. 1790, January 20.—N° 1723.

HOOPER, SAMUEL.—This invention consists in the manufacture from leather or leather cuttings or parings of a material for covering carriages, trunks, &c., and for making hat and band boxes, tea trays, &c., and also in the manufacture of different kinds of paper from leather. For making the material for covering trunks, &c., the leather is washed clean and then worked with a proper quantity of water in an engine till it is reduced to a pulp. If necessary, size may be used. The pulp is then placed in moulds and exposed to the pressure necessary to give it a smooth and even surface, and is passed between iron or brass rollers. For making hat and band boxes, &c., the process is the same, except that when the leather is reduced to a pulp, the pulp must be freed from all water, and mixed with a strong size. It will then attain the consistency of thick paste, and may be moulded into any form. For making paper, the leather is reduced to a pulp in the manner before described. If brown paper is wanted, a fourth part of junk or hemp with a little fine clay is mixed with the leather. For white brown paper the coarsest rags are used instead of the junk and clay. For white paper three parts of fine rags and some size must be added to the leather. The paper is manufactured from the pulp in the ordinary manner.

[Printed, 4s. No Drawing. See Repertory of Arts, vol. 2, p. 271; Rolls Chapel Reports, 6th Report, p. 182.]

A.D. 1790, July 17.—N° 1763.

FAY, ANTHONY.—"Some considerable improvements in the art
" of tanning of leather, and in the construction of tan yards for
" that purpose, by which means much time and labour will be
" saved, and the article produced at a much cheaper rate than by

"any of the modes now in use." The patentee states that for the preparation of tan liquor, bark should be "ground to a fine grain" and boiled in water. The proportion should be about one pound weight of bark to two or three gallons of water, and the boiling should be continued until the bark becomes tasteless. The patentee further states that tan yards should be covered, and that a revolving crane, with a travelling pulley on the arm, should be placed in the centre of the yard. The tan pits should be circular, and in each should be placed two wheels on a vertical axis. The pelts should be hung over the spokes of the upper wheel, and tied to the spokes of the lower one. The wheels should be caused to revolve, which could be done by means of cogs and a pinion or screw, or by pulleys. When necessary the wheels would be hoisted out of the pits by the crane. The tan pits should be in circles round the crane, not sunk in the earth, "and so placed as the seats of galleries are, one higher than another, that they may be discharged into each other readily, as liquor casks are, by a crane or syphon, and each circular pit furnished with a cock at the bottom to draw off the wooze."

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 4, p. 217.]

A.D. 1791, May 2.—N^o 1801.

PEAL, SAMUEL.—An improved method of waterproofing leather and other substances. A thin coating of india-rubber, either in "its native state" or dissolved, is applied to the skin or other article to be waterproofed. The skin, is then placed in a stove or hot room till nearly dry, when another coating is applied, and so on till the requisite thickness of coating has been obtained. The skin is then perfectly dried.

[Printed, 4d. No Drawings.]

A.D. 1793, October 2.—N^o 1962.

WARDEN, WILLIAM.—A "new-invented extract or preparation of or from bark." Three large coppers of different sizes are placed over a furnace or fire place in such positions that the largest copper is the highest, the second in size next, and the third lowest. A cock is fixed into each copper, near the bottom, the cock of the highest coming over the next copper, and the cock of that copper over the lowest copper. Ground bark and water are placed in the highest copper, and boiled until the liquor

becomes the colour of strong coffee. The liquor is then raked off into the second copper, boiled until it becomes glutinous, and then raked off into the lowest copper, where it is boiled until its weight is from twenty-two to twenty-four ounces the pint, when it is drawn off into a cask.

Water is added when necessary to the highest copper, and the process continued until the bark is exhausted.

(Printed, &c. Drawing. See *Bulls' Official Reports*, 4th Report, p. 148.)

A.D. 1794, January 9. N^o 107h.

BRIJAMY, JOHN. An improved method of making leather and other articles waterproof.

The invention consists in the application to leather, &c. of either of the following mixtures:

1. A mixture of nutt or poppy oil, together or separate, with linseed oil or any other drying oil, in such proportions as are found best. When the leather is new a quantity of essential oil of turpentine equal to one fourth of the quantity of oil is added. The mixture is placed over a gentle fire, and half a pound, or other suitable proportion of amber or white coppers, sugar of lead, calcather, or any other proper dryer, either together or separate, is added for every gallon of oil; or,

2. A mixture of the above oils with resin, pitch, and tar, either together or separately, and either with turpentine or without; or with sandarac, mastic, annie, copal, and amber, either together or separate; or with asphaltum and jews pitch, together or separate; or with beeswax or bird lime; or with "any bituminous, resinous, glutinous, oleous, or adhesive matter (except indiarubber) which will resist acids, alkalies, and water, and unite with drying oils," in such proportions as are found best.

Either of the above mixtures to be brushed, rubbed, or otherwise applied on the leather, &c. The superfluous matter to be scraped off, and the leather dried.

(Printed, &c. No Drawings. See *Register of Acts*, vol. 1, p. 78.)

A.D. 1794, January 16. N^o 1977.

AMITTON, MAMUNT. "A method of tanning hides and skins." The following directions for the preparation of tan liquor from

minerals are given by the patentee:—"To sixteen pounds of scales or rust of iron, saturated with six ounces of oil of vitriol and one quart of water, mix six gallons of common water; to sixteen pounds of iron ore, calcined and reduced to powder, mix six gallons of common water; to twelve pounds of sulphur stone or pyrite sulphureous stone, calcined, mix six gallons of common water; to sixteen pounds of the ferruginous yellow earth or red ochre, calcined, mix six gallons of common water; to sixteen pounds of the same yellow earth, in its raw state, mix six gallons of water and six ounces of oil of vitriol; to fourteen pounds of good copper ore, calcined and reduced to powder, mix six gallons of water; to sixteen pounds of ochrea veneris or earth impregnated with copper or copper ore, calcined, mix six gallons of water; to eight pounds of sulphur stone and six pounds of native or calamine zinc, calcined and reduced to powder, mix six gallons of water; to twelve pounds of red ochre and six pounds of native zinc or calamine, calcined and reduced to powder, mix six gallons of water; to eight pounds of sulphur stone or pyrite and four pounds of native sulphur, calcined and reduced to powder, mix six gallons of water; to twelve pounds of red ochre and four pounds of native sulphur, calcined and reduced to powder, mix six gallons of water." The patentee further states that in order to tan thick hides they should be placed in any of the tan liquors above described, and be turned twice every twenty-four hours for seven or eight days, once every twenty-four hours for five weeks afterwards, the time required for tanning them being from five to seven or eight weeks.

For tanning hides intended for crop leather and calf skins, the liquor should be weakened by mixing with it white clay, chalk, whiting, or other pure calcareous earth, and the hides should be turned every six hours for four days, after which from eighteen to twenty-eight days will be required for tanning them. Colour if desired can be given by bark or logwood.

[Printed 4d. No Drawings. See Repertory of Arts, vol. 1, p. 4; Rolls Chapel Reports, 6th Report, p. 189.]

A.D. 1795, May 12.—N° 2051.

TUCKER, JOHN.—"A new method of tanning and making leather of a superior quality and in a much shorter period of time than hath hitherto been done." The invention consists in applying

heat to the woone. The method described as best for this is to place the woone (and the hides apparently) in a vat made of wood perforated with holes and encased in iron. This vat is placed on bricks and enclosed in brickwork, a small space being left all round between the vat and the brickwork for the heat to circulate. A gentle heat is applied from below. Hides treated by this method require to be handled frequently.

[Printed, 4d. No Drawings. See Repository of Arts, vol. 2, p. 217.]

A.D. 1706, June 2. - N^o 2054.

HAWKES, GEORGE. A "new manufacture or invention for "tanning." The invention consists in substituting elm bark for oak bark in tanning. The bark is shaved, cleaned, and ground in the same manner as oak bark, and is used in the same manner.

For every hundredweight of ground bark four pounds of salt are put in the water, with heavy hides, and two pounds with light hides.

[Printed, 4d. No Drawings.]

A.D. 1796, January 15. N^o 2080.

DENMOND, WILLIAM. (*A communication.*)—"The subject of the patent is thus described by the patentee:—"A method or process "communicated to me by a certain learned foreigner, with whom "I am connected, of tanning all sorts of hides and skins, and of "rendering more solid and incorruptible in water several vegetable "and animal substances, such as flax, hemp, spartery, cotton, "silk, hair, wool, &c., as well as the materials made thereof." "The invention consists in a method of preparing unhairing and tanning liquors. Five vessels, called digesters, are used, each of which has an aperture at the bottom, and is set on a stillage, so that a smaller vessel may be placed underneath. These digesters are placed near each other.

For preparing the liquor each digester is filled with tan; water is poured on the tan in the first digester, and drawn off at the bottom either immediately or after some time; the liquor is then poured on the tan in the second digester, drawn off as before, and is in this way passed through the five digesters. The liquor thus

obtained is to be used for tanning the thickest hides, and is termed by the patentee *tanning lixivium*; it has a high colour, and can be tested by pouring on to a small quantity of it a few drops of solution of glue, when the liquor will become turbid. After a certain number of lixiviations the liquor coming from the first digester loses its colour and ceases to become turbid when glue is dropped into it, but will become thick and black if sulphate of iron is dropped into it. When in this condition the liquor should not be put on the tan in the second digester, but should be set aside to be used for depilation; this liquor is termed by the patentee *gallic lixivium*. After a certain amount of liquor has been obtained this *gallic lixivium* also becomes weak and ceases to turn black on having sulphate of iron mixed with it.

In order to tan ox hides, cow hides, &c., they should be unhaired by being steeped in a mixture of gallic lixivium with vitriolic acid or oil, the proportion being one part of vitriol to a thousand parts of gallic. The hides can then, if necessary, be raised by being placed in water containing a very small quantity of mineral acid, and are tanned in preparations of the lixivium of gradually increasing strength.

Calf, goat skins, &c. are unhaired in lime water, and then tanned in lixivium weaker than that used for hides.

[Printed, 4d. No. Drawings. See Repertory of Arts, vol. 6, p. 7.]

A.D. 1797, January 27.—N^o 2159.

MURPHY, JAMES. — "Various improvements in the art of tanning all manner of hydes and skins, and in the construction of tan pits or vats, with several utensils appertaining to the same." The invention consists, first, in a method of constructing a tannery with several utensils for heating the same. The tan pits or vats are placed in two rows in a building. A steam pipe passes along the centre of the building between the tan pits. This steam pipe has lateral pipes branching out from it which distribute the steam into hollow spaces at the sides and ends of the vats. A subterranean flue also passes underneath the vats having an aperture under each of them.

Secondly, in a manner "of preparing an alkaline ley." Wood ashes are lixiviated with water, quick lime being added. If a more caustic menstruum is required, fresh burnt lime may be added

and if a very caustic menstruum be required, sulphur may be substituted for lime. In place of these a dilute solution of vegetable alkali obtained from refined wood or weed ashes, or dautric pearlsh, or a dilute solution of mineral alkali obtained from sweet barilha, crystallized pod, or kelp may be used.

Thirdly, in a method "of extracting an astringent liquor or "ouse." This is done by boiling ground oak in the first alkaline menstruum above mentioned, a wooden vessel being used and the liquor being strained after boiling; or the ley may be mixed with soft water boiled, boiled and poured on the bark; or the menstruum may be substituted for water in tan pits. To prepare an ouse for calf skins, &c. a larger proportion of water is used than is taken for the first mentioned process; the ley and water are poured hot on ground bark, and the decoction is drawn off through a hair strainer. In place of oak bark the following substances may be used with the alkaline menstruum :—The bark of either plane trees, elms, beeches, poplars, horse chestnuts, willows, or alders, sumach, oak sawdust, oak leaves, walnut rinds, tormental root, or sweet broom.

Fourthly, in a method of concentrating the astringent liquor." A liquid extract of any one of the vegetable substances above mentioned, made with one of the alkaline menstruums or with water, is put in a retort and boiled, when "the astringent matter "will rise and pour out copiously into the receiver;" or either of the most tenacious of the vegetable matters is steeped in caustic vegetable alkaline ley, or in liver of sulphur, and afterwards distilled in a retort as before.

Fifthly, in a method of "combining the astringent particles of "the ouse with hides and skins." Alum is dissolved in hot water and this is mixed with vegetable ley. In this mixture the hides are swelled and they are afterwards "immersed in a horizontal position in the tanning pits with the ouse milk warm." Instead of alum and water a small quantity of vitriol may be mixed with the vegetable ley. The skins are rubbed with oil after tanning.

[Printed, 8d. Drawings. See Rolls Chapel Reports, 6th Report, p. 146.]

A.D. 1797, April 26.—Nº 2179.

CROSS, ROBERT.—"A tan pit upon a new construction, and a "mode of tanning by which leather will be tanned in about a
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“ sixth part of the usual time and much less labour and expence
“ and whereby leather is rendered in every respect much superior
“ to that tanned by any mode hitherto invented.” A tan pit with wooden sides and a stone or metal bottom, lead being preferred, is placed upon two low walls. Between these walls under the pit is a fire-place by which heat can be applied to the tan pit. Boards for the hides to lie on are placed on the bottom of the pit inside, when the bottom is made of lead, and each of the inside angles is cut off by having a small plank placed across it, which plank, however, does not quite close the angle and does not come quite down to the bottom of the pit. The angles thus partly closed make four channels in which the warm wooze can circulate freely. Tan pits without fire-places can be placed on each side of a tan pit thus constructed and can receive the warm wooze from it by pipes. Heat is not to be applied oftener than every other day.

[Printed, 10d. Drawings. Repertory of Arts, vol. 11, p. 1.]

A.D. 1798, February 28.—N^o 2218.

CEDERBARG, ANDRU.—A machine for glazing, polishing, and graining leather and other articles. The machine consists of a foundation or bed of wood fastened to cross rails. On the bed are pairs of pillars, upright or sloping, one pair at each end and one or two in the middle supporting a cross rail on which are fixed double gudgeons, with three or more friction rollers in each, to receive the shaft of the machine. On the bed between each end pillar and the centre one is placed a table with a circular sweep to the face of the machine. These tables move on rollers running on iron plates fastened to the bed, and are moved backwards by means of a cord or chain passing from the front of the table through multiplying pullies at the back and fastened to an iron cross bar turned by a hand bar or treadle. In front are hung weights sufficient to bring the table forward to the machine and keep it to the work when the hand or treadle is discharged from the hold at the back. The iron shaft of the machine has three grooves by which it is fitted to the gudgeons and friction rollers on the pillars on which it runs. The shaft is made to receive a number of levers fastened to it by a round eye and a binding screw. On each lever is a socket made to receive a roller *polisher or grainer of glass, stone, wood, metal, or bone.* The

length and position of the roller, &c. is regulated by two counter nuts one before and one behind the sockets. The shaft is moved by a large fly wheel placed at the end to which is attached a handle. The wheel may be worked "by man, horse, water, wind, or steam." As the wheel is worked the polishers, &c. fastened to the levers attached to the shaft strike upon the leather, &c. placed on the tables. There is a description of a further addition to the machine to be occasionally used for the charging and discharging of linens, cotton, calicoes, &c.

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 193.]

A.D. 1799, January 4.—N° 2285.

ALISON, WILLIAM.—"Invention for manufacturing an article "into leather commonly called Spanish or Morocco leather." The dried horse hides from which these leathers are made are by the patentee's process first soaked in "soft stinking water," then taken out, spread over a tanner's beam and worked on the flesh side with a knife, to break the film which much dryness has produced, and are afterwards soaked again in the same water. They are next unhaired with lime water, after which they are put in a mixture of warm water and dog's dung and worked over a beam with a knife on both sides. They are then put in blood warm water with a layer of bran between each of them, and are afterwards tanned with shumack in the same manner as goat skins are.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 5 (*second series*), p. 282.]

A.D. 1799, February 5.—N° 2293.

WATTS, JOSEPH.—"Improvements in the art of tawing, dressing, or converting both foreign and English kid, lamb, goat, fawn, and sheep skins, or other skins usually tawed or converted into leather fit and proper to be manufactured into gloves and mittens or other articles without the materials or use of lime, bran, or salt, and in a very considerable shorter space of time, and with less expence and labour than hath ever yet before been used in tawing or converting skins into leather, and of a superior quality." The skins are to be twice soaked and after each soaking worked on a beam on the flesh side, then

placed in a tenting stove where they remain until a slime rises on them, when they are to be taken out and to have the slime removed. They are then put back in the stoves, remain there till found to be ready for unhairing, and are then unhaired. After this they are soaked, drained in an osier basket, and are cleaned on the flesh and grain side with a knife. They are then again soaked, drained in an osier basket, worked in a liquor of alum dissolved in warm water, again drained in an osier basket and trodden in a liquor made of the yolks of duck's eggs beaten up in warm water. The skins are then dried and afterwards put to cool in some damp cellar or place and are staked and pared in the ordinary way.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 11, p. 161; Rolls Chapel Reports, 6th Report, p. 195.]

A.D. 1799, April 27.—N° 2310.

KNOWLES, JAMES.—“A new mode or method of dressing or “preparing of skins for the purpose of converting them into “leather.” The method described is to dip the skins in water after the hair has been pulled or taken off them, then to flesh them, and then to dip them in water again. After this the skins are skudded or struck, and they are then in a fit state to be tanned, tawed, or dressed. The use of lime is altogether dispensed with.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 12, p. 19; Rolls Chapel Reports, 6th Report, p. 195.]

A.D. 1799, June 6.—N° 2317.

CHAPMAN, THOMAS.—“A new improved method of taking or “getting off the wool or furr from seal and other skins in a more “perfect state than has hitherto been done, for the purpose of “manufacturing the same into hats or any other article of “cloathing, whereby the skins or pelts are less damaged than by “any other process yet adopted, and are kept and preserved in a “perfect state for the purpose of tanning into any kind of “leather.” By the patentees process the skins are first soaked in cold water, then worked with the fleshing knife, washed in hot water containing soap and pearl ash, and dried. The skins are then washed in the same mixture as before, and worked on the beam with the beaming knife which brings off all the coarse hair. *The skins are next soaked in warm water containing soap, pearl*

ash, and banilla, after which the remaining hair is taken off with the beaming knife. The hair or wool thus obtained is cleansed and prepared by being washed in water containing soap and pearl ash and afterwards in warm water simply.

[Printed, 4d. No Drawings. See Repository of Arts, vol. 11, p. 274.]

A.D. 1799, June 18.—No 2319.

BREWSTER, FRANCIS.—An improved method of tanning. "Provide twenty-four tan vats with an eye in each similar to a leak eye, but two feet in height will be sufficient, and the bottom should be about four inches lower than the bottom of the vat, in order that the whole of the woone may be pumped out of the vat; and twelve leaks that shall each contain half as much more as each of the vats, also with the eye four inches deeper than the bottom of the leak." The vats and leaks are to be in three rows close together, one row of vats being in the middle with the row of leaks on one side, the other row of vats on the other side. The row of vats next to the leaks is to contain the weakest woone, and the further row the strongest woone. "Make the whole of the leaks, and also the last mentioned vats," i.e., the row nearest to the leaks "in the same manner that a common set of leaks are usually made, but with these exceptions, that instead of filling up the leaks at different times with bark, put into each leak the whole quantity at once, and instead of putting bark in the vats, put in such a quantity of hides or skins as may be deemed consistent with the size of the vats (which in general should be the greenest goods in the yard) and handle them as often as may appear necessary, judging from the state and quality of the goods and the strength of the woones. The other twelve vats fill, so far as that they will contain the usual quantity of goods, with woones drawn from the best leaks as often as the woones in the course of making the leaks, which appear to be of a desirable strength, into which put the remainder of your goods. A woone of ten times the strength of the best woones that are general used will be better than a stronger. Supposing the whole of the vats and leaks to be compleatly in work, as soon as any of the woones in the vats numbered above twenty-four" i.e., the row of vats furthest from the leaks "shall appear to be in a small degree spent, and that the bark in the leak next better than the greenest pack is so far spent as that the woone and water that

“ will afterwards, in the course of working the leaks be sufficient to compleatly spend it, proceed to cast your bark and make a new leak; work the leaks as far as about the second best, when, instead of working them through, fill up the first and second best with the wooze from one of the vats numbered above 24, which contains the wooze that you wish to renew. After they have stood about half a day or a day, draw your wooze into the empty vat, continue to work through the three best leaks as many of the strong woozes, numbered above 24, as you think proper.” The vats and the leaks are then to be worked through in such a manner that the worst leak will become the best, and that the leak which was before the worst but one will become the worst.

It is further stated that the hides may be either handled in the usual way in the vats or hung in them on sticks or hooks, and can be shifted from one vat to another by a moveable crane. There may be pipes of communication between the leaks, and also between the vats.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 11, p. 289; Rolls Chapel Reports, 6th Report, p. 196.]

A.D. 1799, November 4.—N^o 2354.

PRIOR, EDMUND.—An invention for “ painting and colouring all kinds of leather in all colours in a manner perfectly new, by laying on such a body of colour that the leather so painted will be quite elastic and soft, with a pleasant smell and preserve its tints; after being wet or dirty it may be washed with a sponge and cold water without fading in parts or becoming of different colours, yet without being subject to crack.” This invention consists in burning or boiling the oils before mixing them with the colours. The colours are mixed with burnt linseed oil, with sugar of lead, or any other dryer, and are brushed on to the leather; when dry the leather is varnished, oil varnish being the best to use.

[Printed, 4d. No Drawings. Rolls Chapel Reports, 6th Report, p. 148.]

A.D. 1800, June 10.—N^o 2409.

WEEKES, JOSEPH. — A “ new-invented apparatus or set of machinery, &c. for a tannery or other purposes.” The invention consists :—

First, in machinery for scraping and cleaning hides. A lever worked by horse power revolves on a shaft on the base of which is

fixed a large toothed wheel which causes a spindle to revolve. At the end of this is fixed another toothed wheel, which gearing into a toothed wheel fixed on the axis of a cylinder causes the cylinder to revolve. At the end of the cylinder furthest from these wheels is fixed a toothed wheel which gears into another toothed wheel, on the axis of which is a wheel which by means of a belt gives motion to a wheel fixed on the axis of a large drum. Between the cylinder and the drum is a piece of wood pressed by two springs against the cylinder. The cylinder is fitted with scraping knives. The hide is passed between the piece of wood and the cylinder, and attached to the drum, which in revolving draws the whole of the hide between the piece of wood and the cylinder. The cylinder revolves at the same time, and the hide is scraped by the knives.

Secondly, in a "mill or machine for cutting or grinding the bark." The large toothed wheel on the axis of the lever causes to revolve another spindle (opposite that which gives motion to the scraping cylinder), on which is a toothed wheel which gears into another toothed wheel fixed on the axis of a cast iron cylinder, on which are iron or steel teeth. These teeth as the cylinder revolves pass close to an iron bar breaking and dividing any bark placed between them and the bar. The bark falls into a "riddle" or circular sieve fitting round the lower part of the cylinder. A toothed wheel on the axis of the cylinder works into another toothed wheel and causes to revolve a fluted roller pressing down on another fluted roller. The bark is fed between these two to the bar and toothed cylinder.

Thirdly, in "machinery for raising or conveying woone or any other liquor." A crank fixed on the end of the last-mentioned spindle works a rod which turns a wheel fixed on an arbor, on which is another wheel. Over this wheel a chain passes, the ends of which are attached to two pistons in pump tubes. These pump tubes are connected by other tubes with the liquor to be raised.

[Printed, *ad.* Drawing.]

A.D. 1800, September 15.—N^o 2442.

HITCHCOCK, JAMES.—An invention for "changing and converting skins of parchment and vellum into leather, and of

"making such leather waterproof." The change of parchment or vellum into leather is effected as follows:—The skins after being soaked in water and rinsed are immersed for twenty-four hours in twenty gallons of water with one and a half pounds of white copperas bruised fine, one ounce of sal armoniac, and one pound of cream of tartar. The solution is then strained into another vessel and one pint of spirits of marine salt, one pound of spirits of nitre, and ten pounds of oil of vitriol added to it. After twenty-four hours in this solution the skins become soft and pliable and free from lime. They are then soaked in water for twelve hours rinsed out and dipped for five minutes into a blood warm decoction of twenty pounds of oak bark, five pounds of elm bark, three pounds of lignum vitæ chips, the same of sarsafra, and seven pounds of shumack in twenty gallons of water; the decoction having been previously boiled for twenty-four hours. The skins are then placed in tan pits with a weak solution of bark or shumack for four or five days.

The water-proofing is effected by soaking the skins in nut or linseed oil for five or six days. They are then rung out, stretched and brushed over with a composition of red lead, litharge, copperas, sugar of lead, rosin, bees-wax, and pitch (one pound of each) in seven gallons of linseed, nut, or fish oil.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 5 (*second series*), p. 260.]

A.D. 1801, March 27.—N° 2486.

LENZ, GOTTLÖB FREDERIC.—A "method of constructing tan pits for tanning hides and skins, and for striking hides by machinery."

[No Specification enrolled].

A.D. 1801, May 21.—N° 2505.

BAGNALL, THOMAS.—The invention consists in a machine for chopping and grinding bark, for beaming hides and skins, and for scouring and taking the bloom off tanned leather. A large cog wheel turned by a water wheel gears into a cog wheel fixed on an upright shaft, and causes the shaft to revolve. On the higher part of this shaft is a cog wheel which gears into another cog wheel so as to turn a grindstone. The bark is placed on a grating, and chopped by a cutter worked through connecting rods

by a tapit on the large cog wheel below. The bark when chopped descends by a tray and hopper to a shoe over the stones where the bark is ground. It then passes through a spout into another trough wired so as to sift the bark. That portion which does not pass through the wire falls into a dish, and is crushed by a hammer worked by a tapit on the large cog wheel.

The cog wheel on the top of the shaft turns a bevil wheel, on the shaft of which is a crank. This crank by means of a connecting rod gives motion to a shaft, to which a sliding rod is attached. On the under side of these sliding rods knives are fixed. The hides are placed underneath the sliding rods and held firmly down. The shaft gives a backward and forward motion to the sliding rods, and the hide is scraped by the knives. By means of a catch which catches on an arched head the sliding rod is lifted up on its backward stroke.

"The whole machinery may be worked by water, wind, steam, or any other power."

[Printed, 8d. Drawing. See Repertory of Arts, vol. 18, p. 148.]

A.D. 1801, June 18.—N^o 2516.

LENZ, GOTTLÖB FREDERIC.—"A new method of constructing
"tan pits for tanning of hides and skins, and for striking hides
"by machinery."

The patentee states that the vats, which should be of wood, are to be arranged in sets of three, and with pipes passing through them at the bottom. "To heat the woone you place
"between two setts or near two setts of vats, a stove of any convenient size, of either cast iron or other materials, with a pipe
"for the conveyance of the smoke of about one foot in length;
"join it to another pipe which divides itself into two arms, one
"of which you direct through the vat on the right hand,
"and the other through the vat on the left hand." The vats are warmed by these pipes, and the passage of the heat is regulated by means of plugs.

For striking leather the patentee states that the leather is to be placed on a board and passed backwards and forwards between two rollers, which are to be arranged as in Mr. Boulton's copying machine.

For preparing woone the patentee states that several tubs of leaches are to be used, in each of which an equal quantity of

bark is to be placed. Water is to be poured into one, and after standing there for a time is to be conveyed into the next, and should in this way be passed through six leaches. This operation is to be continued until the bark in the first leach has lost its strength, when that leach is to have fresh bark put into it and to become the last of the series, the second becoming the first, and so on.

The patentee further states that goods for crop leather are to be tanned in a weak wooze and then successively in three warm woozes of two, three, and four degrees of strength, by the hydrometer for salts. Goods for dressing leather are to be tanned in a weak wooze, then in a wooze of one degree of strength, and then in a warm wooze of three degrees of strength.

[Printed, 4d. No Drawings.]

A.D. 1801, November 3.—N° 2547.

WALKER, JOHN, and ALPHEY, GODFREY.—An invention for waterproofing hats, caps, leather, silk, and other substances. This invention consists in painting the substances meant to be made waterproof both inside and out as often as may be required with oil, paint, or oil and lamp black, the latter being preferred. When dry they are covered with one or more coats of japan or varnish mixed with lamp black or ivory black.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 1 (*second series*), p. 257.]

A.D. 1801, November 3.—N° 2550.

BREWIN, FRANCIS. — “An improved method of tanning.”
 “Twenty or twenty-five vats I consider as constituting one complete tan yard, and my vats being nearly of one size I take two or three of the centre vats, which I use as spenders, four or six immediately next to these I make my floating taps, each containing an eye and a false bottom. The remainder are vats and handlers, in which I use all my fresh bark. One floating tap I keep empty, that it may contain the whole of the ooze and bark in a vat or handler, into which floating vat I draw the ooze and bark from that vat or handler which I conceive most necessary to be drawn. I draw off by a pump from this floating tap, now the best, my oozes into the vat or handler from which it last came, making up the deficiency from the

" second floating tap, late the best, but working it first through the one now made. I put the goods down in the drawn oozes with about three times the quantity of bark that is generally used with one pack. I continue to work the whole of the floating taps as though they were one set of taps, but first I throw up each pack of goods, and after the floating taps are worked through I shift the floating packs as in a set of handlers. The bark in the late worst floating tap being, after the whole has been worked through, thrown into the spender, causes such floating tap to become the empty floating tap, ready to receive the ooze and bark from the vat or handler next to be drawn. Experience, perhaps, may prove it to be most advantageous, particularly where the number of floating taps exceed six to draw the oozes from one of the more backward floating taps instead of the best. In this case those floating taps only that follow the one drawn from must be considered as floating taps, and the others worked merely as floaters by shifting the packs only.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 16, p. 280; Rolls Chapel Reports, 6th Report, p. 109.]

A.D. 1802, April 19.—No 2613.

MARTIN, THOMAS.—" New improvements in the art of tanning and dressing hides and skins." The first part of the invention consists in placing a boiler near a series of vats which communicate with each other. The water is conveyed by a pipe into one of these vats, which is used only to regulate the heat of the water. From this vat the water passes into the others, and the hides after being limed are soaked in these vats, the water being kept a little warmer than blood heat. By these means the blood, and filth in the hides are got rid of. The vats have false bottoms through which the blood, filth, &c., pass on to the real bottoms, and are drawn off by means of plugs and sewers. The hides are cleaned with a knife and limed in the usual way.

The tanning vats are thus described : " I construct a circulation plant, of sixteen pits or vats, each of about six feet long, four feet and a half wide, and six feet deep, but the principle will equally apply to any number of any dimensions; the pits must be constructed of sound wood, the upper plants of oak." These pits or vats are to rest on a flooring supported by joists. In the vats must be " loose false bottoms, with crevices or holes, and not less than six inches from the real bottoms, that the filth

" that accumulates in the vacancy, may be removed. At least " two inches above the false bottoms must be circulation holes at " transverse corners, large enough to permit the liquor to run one " vat from another " (*sic*). Guard boards, with holes or crevices, are placed on each side of the circulation holes, and " slips or " rabbits of wood " are also placed " at each side of the circulation holes, with valves or sliding doors to move up or down by " means of a strong wire, or bungs or plugs to put in or take " out." By means of these doors a pipe can be passed from one vat through an intervening vat into another vat, so that the circulation of the ooze may continue when the intervening vat is empty. The ooze may also be removed by means of a pump or jet, and another part of the invention is to make an elevated vat, out of which the ooze flows through a pipe into a boiler in which the ooze is warmed and from which it flows into one of the vats. A well is to be sunk near the vats into which the contents of any one of the vats may be emptied by means of a pipe leading from the bottom of the vat to the well.

[Printed, 6d. Plan. See Repertory of Arts, vol. 2 (*second series*), p. 1; Rolls Chapel Reports, 6th Report, p. 201.]

A.D. 1802, May 10.—N^o 2618.

LAWRENCE, JOHN.—" A new method of tanning." The invention consists " in the use and application of oak sawdust " instead of bark, or, in other words, in using a liquor made " from oak sawdust instead of that made from oak bark."

[Printed, 4d. No Drawings. See Repertory of Arts (*second series*), vol. 1, p. 81.]

A.D. 1802, May 31.—N^o 2624.

CANT, JOHN, and MILLAR, JOHN.—" A new method of tanning leather." For preparing the tan liquor, the patentees boil ground oak bark in water or nearly spent liquor. When the bark is spent, it is dragged out of the boiler and put in a " lake " where water or spent liquor is run upon it. This liquor is subsequently used for filling the boiler, and thus every particle of tanning substance is extracted from the bark.

Hides and skins to be tanned are to be first limed, haired, fleshed, and baited in the ordinary way. They are then washed *in water or weak liquors*, next put in liquors which have already

been used, and then put in stronger and stronger liquors until tanned. If a white bloom is required, a small quantity of dist. or smallest bark should be put in the liquors. Hides for crop leather are to be limed, haired, and fleshed in the ordinary way, but instead of being battled should be worked in fresh water immediately before tanning, and tanned in the strongest liquors made from hard water. Hides for bulls and backs should be pained in the ordinary way with acids made of yre rather than of vitriol. These hides should be tanned in liquors made from hard water, and suspended in the pit by rods or ropes. "Where hard water cannot be got, lay the hides among water as usual, with layers of bark twist each, which, if small ground, will be exhausted in three weeks, then to be kept away among strong liquor as prepared by us and a layer of dry bark."

The patentees state that by these processes hides can be tanned in a very short space of time, and also that by their method tanning material can be extracted from the bark of many kinds of trees and from oak sawdust, chips, and especially from the growths or shoots of oak roots, and from twigs.

[Patent, &c. See Drawings. See Reports of Arts, vol. 4 (second series), p. 60, and Wells's Patent Reports, 4th Report, p. 141.]

A D. 1863, June 26. N^o 3511

RICHARDSON, Thomas. An invention "of certain improvements in the arts of preparing, colouring, and joining, or uniting the skins of sheep and lambs." The skins after being tanned and beaten on the wool side are soaked in clear water for six or eight days. They are then secured in the usual manner and those meant to be of the plain colour the wool taken from ten cuts are hung up to dry. Those meant to take fire or tan colour are plunged in lime water, prepared as usual, till sufficient depth of colour is produced.

The colouring in spots is produced in the following manner: The parts of the wool not meant to be dyed are covered with wool, the skin is suspended horizontally over the vat and lowered gradually till the uncovered wool comes in contact with the dye, care being taken that the dye do not touch the skin itself.

The joining is effected by placing the skins on the table with the leather sides upwards, the edges of the skins are brought together and sewed with strong waxed thread a little below the edge which is then turned over and rubbed down close. A variety

of articles are manufactured from the skins so prepared, coloured, and joined.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 2 (*second series*), p. 323; Rolls Chapel Reports, 6th Report, p. 201.]

A.D. 1804, December 19.—No 2804.

WILLCOX, RICHARD.—“Machinery for more expeditiously cutting, stripping, or plucking the various furs of beavers, seals, wool, hair, &c., from the various skins now cutt, plucked, or stripped by hand, and for sundry methods of preparing and cleansing the said skins.”

The following inventions are specified by the patentee :—

“First, instead of the left hand, now usually employed for holding down the fur (whilst cutting), I substitute a thin plate of metal, ivory, or any other hard elastic wood or other suitable material capable of holding down the fur, which I place on its edge, and press close in contact with the pelt of the skin, which is previously laid smooth either on a horizontal bed or on a roller (the latter, however, is preferable).”

“Secondly, to produce a similar effect, I use or employ a metal, ivory, or ebony roller (the former, however, has a decided preference).” “This roller is to be moderately pressed in contact with the surface of the pelt, the said roller being turned in a contrary direction to that of the skin, whereby the fur is effectually drawn or removed out of the way of the knife, and prevented from being mutilated or cut short.”

“Thirdly, for effectually separating the fur, and for cutting, or cutting and plucking in the same machine, I employ with the roller,” and drawn round it “by a connection of leading rollers attached to a driving roller, a piece of canvass, russia duck, ticking, or other similar strong material, joined at the two extremities, and forming a perpetual web round the said rollers. By this means the canvass or other cloth, being pressed in contact with the surface of the skin, and moving with about double the speed of the skin in a contrary direction causes the fur to adhere to the said canvass in the exact order, situation, or arrangement (when cut as it were on the skin or pelt, where it may be divided or locked at the option of the person attending the machine) (*sic*).

“Fourthly,” cutting the long or coarse hair by a metal plate placed “as close as possible to the surface of the fur attached to

" the canvass as described. The long hair now usually plucked comes in contact against the edge of the said plate, whilst a roller, studded with different rows or locks of hair, leather, or any other flexible metal or elastic matter, which being driven in the same direction with the fur, effectually brushes, scrapes, wipes, or separates the long hair cut from the skin from the fur."

" Fifthly, to strengthen the said skins and prevent the possibility of delay. In case the pelta being cut I fix the skins (previously to cutting) on a strong canvass cloth, or other similar article, covered with the cement composed of wax, rosin, grease, and a little ochre, or of pitch, rosin, oil, and brimstone, or of paste and rosin mixed and put on the skin, and then pressed on the tick or cloth."

" Sixthly, as the fur on some particular skins is very short," for plucking such skins I fix the extremity of the skin to or between rollers, so as to draw it slowly over a roller, with a second very small roller in front of the skin, whilst a third larger roller, resembling a worm or quick flat threadscrew, when viewed in its longitudinal direction, moves with a greater velocity in the contrary direction to the skin," so that a portion of the hair is caught and pulled out.

" Seventhly, my knives form a very important part of this my invention, being made of the best hardened tempered steel, which is fluted, grooved, or toothed on the face side, so that when ground for use on the opposite surface, it obtains an edge similar to a very fine saw, and being principally made circular turns on its axis against its work, and thereby produces a drawing stroke with much greater velocity than would be produced by rotation." The knife "is found to keep its edge at least twelve times as long as the present knives" of malleable iron.

[Printed, 10d. Drawings See Repertory of Arts (second series), vol. 2, p. 261.]

A.D. 1805, January 23.—N^o 2814.

MOLLERSTEN, CHARLES FREDERIC. "A chemical composition and method of applying the same in the preparation of hides, skins, and leather, silks, taffetas, and linen, and to all articles already made of skins and leather, thereby colouring

The liquor thus prepared is to be allowed to cool before the hides are put in it. The skins are to be handled at certain intervals, and the hides at longer and different intervals. It is further stated that for tanning backs and bends oak bark must be added to the materials of the tanning liquor.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 12 (*second series*), p. 21. Rolls Chapel Reports, 7th Report, p. 195.]

A.D. 1808, January 30.—N° 3105.

NEWBERRY, WILLIAM.—“ Certain machinery for the purpose “ of sawing wood, splitting or paring skins, and various other “ useful purposes.” The machine for sawing wood consists of an endless saw revolving over two dumb wheels or rollers placed the one above and the other beneath the bench, on which the object to be sawed is placed, and through which the saw blade passes. The piece to be cut may be brought forward either by hand or fed up on rollers, so that “ on causing the wheels to “ revolve by any moving power the saw continually passes through “ the piece till it is cut.” The machine is fitted with guides for cutting parallel pieces and circles of all sizes.

“ Secondly, for splitting or paring of skins, the two wheels are “ laid level instead of being over each other, and an endless knife “ is worked upon them, to which are affixed two whetstones, one “ above and the other below it, so as to sharpen the knife as “ it goes; it is used with the rollers, &c. of a common skin-splitter.”

[Printed, 6d. Drawing. See Repertory of Arts, vol. 13 (*second series*), p. 81; Rolls Chapel Reports, 7th Report, p. 200.]

A.D. 1808, March 7.—N° 3115.

JEFFERSON, THOMAS, ELLIS, JOSEPH, and GALLOWAY, ALEXANDER.—“ A machine or machines for the purpose of “ finishing, glazing, and glossing of leather.” The improvements consist :—“ First, in placing any convenient number of glazing or “ graining cylindrical rollers (or of any other convenient form “ of glazer or grainer) at the extreme diameter of the wheels or “ circular plates to which they are connected, with the ability of “ extending or contracting the distance of the extreme of each “ roller or glazer from the center of the wheels or plates to which “ they are joined.” Four or more sets of radii or “ chops ” are *set on a large wheel made of two cast iron plates.* These chops

are placed in the position of radii, and extend from near the centre of the wheel to beyond its circumference. In the extremities of the chaps rollers of iron wood or other suitable material are held on bolts passing through the extremities of the chaps outside the wheel. By these rollers the glazing, &c. of the leather is effected. Behind each chap on the wheel is an iron sock through which pass drawing and pushing screws "which draw in and " throughout " the chaps at discretion," i.e. push out or draw in the chaps. The chaps are held to the wheel by binding screws.

" Secondly, in the construction of the table which receives or " supports the leather." The table is in the shape of a segment of a circle corresponding with the revolution of the rollers and can be brought into " any degree of contact " with the rollers, at the discretion of the operator." For this purpose the table is fixed to an iron stage which can be moved on its bed towards or from the glazing rollers. Motion is given to the stage in the following manner:—A stage weight attached to a chain passing through a pulley and fastened to the bottom of the stage tends to draw the stage away from the rollers. The action of this weight is counterbalanced by another weight fixed on the axis of a treadle; at one end of this treadle are cog teeth which gear into a cog wheel fixed on the same axis with a chain wheel, round which passes a chain attached to the stage. The footboard of the treadle extends some distance behind the stage, and by applying pressure to this footboard the stage and table are moved.

" Thirdly, in adopting a discretionary means which shall " determine the exact degree of contact to which the table shall " approach the roller shaft " (i.e., the rollers). This is effected by a " table guide or stop " consisting of a plate or bar of iron placed at the end of the table. This plate is held by two drawing and pushing screws by which it can be pressed against the end of the table so as to regulate the extent to which the table can be advanced, and therefore to determine the degree of contact between the table and the rollers.

[Printed, 1862. *Drawings. New Repository of Arts*, vol. 18 (second series), p. 146; *Monthly Stage Reports*, 7th Report, p. 66; *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 66.]

A.D. 1868, July 30.—N^o 3158.

HERBERT, LUKA.—" A machine on an improved construction " for polishing, embossing, and graining leather and extending
" 2

" and flattening the same, and applicable to other useful purposes. The patentee after stating that according to his invention he constructs a large wheel and fits or applies to it any suitable machinery for causing it to revolve on its arbor shaft or axis, says, "at or about the circumference of the said large wheel, but " by preference at the outer end of the spokes thereof, I do fix " certain tools or implements, such as may be fit for acting upon " the surface of leather." "And in the manner or method of " fixing I do dispose of the acting faces of the said tools or " implements respectively in such a manner as that the action " shall be performed or effected by a rub or pressure, perpendicular or nearly so to the face or plane of the said large wheel," " or otherwise in lines of pressure parallel to the arbor shaft or " axis of the said large wheel at the same time that the said tools " or implements are carried along by the circular motion." "And further, I do place and fix round the said large wheel " certain tables, platforms, or supports, upon which the skins of " leather are to be disposed during the processes of manufacturing " and finishing." The patentee further states that in order that the pressure may be duly regulated he causes the tables, &c. to react against the tools or implements by the power of "a spring or " weight or other yielding force," and that, though the machine will admit of considerable variety in construction and position, he prefers "that position of the great wheel which requires the plane " thereof and the said tables, platforms, or supports to be horizontal and the arbor shaft or axis to be upright."

[Printed, 1s. Drawing. See *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 68, and *Rolls Chapel Reports*, 7th Report, p. 201.]

A.D. 1808, November 3.—N^o 3178.

BROOKES, SAMUEL.—The invention relates to the splitting of raw hides, and is thus described. "Instead of slitting the tanner's hides by the machinery of cylinder and knife, as hath hitherto been done, or shaving the raw hide by a currier's knife, I do take the hides of bulls, oxen, and cows, in the raw state, immediately after the same shall have been unhaired, and " I do split the said hides by machinery of like construction but " of larger dimensions than heretofore used."

[Printed, 4d. No Drawings. See *Repertory of Arts*, vol. 15 (*second series*), p. 208; *Rolls Chapel Reports*, 7th Report, p. 208.]

A.D. 1869, April 3.—N° 3222.

WILLCOX, RICHARD.—"Mundry apparatus or machinery for
" accelerating the manufacturing of felt or stuff hats, and for
" cutting and removing by machinery the furs of beavers, of
" rabbits, and the whole variety of skins the furs or wool of which
" is used for the purpose of hat making." This invention consists, first, of a method of holding down the fur or wool during the operation of cutting, and also of removing it when cut. As the skin is advanced to the knife on a roller in the ordinary manner, the fur is held down by an apparatus called a "drag," which is disposed in a position parallel with, or inclined to the axis of the large roller, on which the skin is advanced, and is constructed so as to produce an even pressure and accommodate itself to the varying thickness of the fur. To effect this an edge bar is used composed of three parts; two form a case "somewhat similar to that of a pocket comb;" the third or middle piece projects below the other two about five-eighths of an inch, and is riveted to them at both ends. By this means the middle piece will spring on its edge, and so accommodate itself to those skins which are thicker in the middle than at the edges. To remove the fur when cut from the drag a rake is used "formed either on the principle of the drag, or in other cases a piece of steel, or steel and iron, placed edgewise and brought to a knife which is afterwards a little taken down by a file or fine gritstone."

"The machinery to work the drag and rake may be any of the well-known eccentric motions, as cranks, heart wheels, &c., and connected by any of the well-known methods of communicating motion to different shafts. The effects of this apparatus are that at each stroke of the engine the edge of the rake comes into contact with the edge of the drag, and presses on the skin so as to relieve it in some degree from the weight of the drag (and in some cases the entire weight), and as the rake recedes by the eccentric motion, draws away the fur cut off. The drag now presses on the fur while a second stroke is made, and another portion of fur cut, while the rake is raised by its machinery sufficiently high in its back stroke to be clear of the fur, and fall the next stroke in contact with the drag as before, and is again ready to draw away the fur about to be cut." Instead of the rake an endless web passing over a series of rollers

may be used, and made of canvass or any other suitable material to which the cut fur will adhere.

This invention also refers to an apparatus for plucking furs. The skin is disposed on a cylinder and fastened to it by one edge; it is then passed over a bar above, and hangs over the front of the cylinder. The operator plucks with both hands, using a two-handed knife. The invention also refers to a machine by which the fur may be cut without using any apparatus to hold down the skin. The skin is attached by one of its edges to a roller. A circular knife traverses the length of the roller on a moveable carriage, and on the carriage is an arm supporting a small piece which confines and the same time tears the fur off the pelt, as fast as it is cut, onto a creeper on which it is locked. It also refers to an apparatus for holding down the fur on the roller. This is effected by means of two small cones so disposed as to be in contact with the surface of the roller and also with that of a plate. They press moderately on the fur by the action of a spiral spring and revolve on their respective axes separately by bevil gear affixed to their bases. The apex of each cone is supported by a projecting piece. The corresponding bevil wheels are set in an upright shaft driven by a wheel or other usual contrivance.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 18 (*second series*), p. 198; Rolls Chapel Reports, 7th Report, p. 108.]

A.D. 1810, June 19.—N° 3347.

REVERE, JOSEPH WARREN.—(*A communication.*)—"A new " and improved method of splitting hides and shaving leather." " Two cylinders of metal or any other hard and firm materials " fluted or grooved longitudinally upon the surface of both " of them," placed parallel to each other, one being over the other, are "connected by wheel work so as to move together " by means of a winch or any other first mover." By means of screws the upper cylinder can be placed at such a distance from the under cylinder as may be required for the leather that is to be split. A straight edged knife set in a metallic frame is fixed just opposite the two cylinders in such a position that the edge of the knife lies in the angular space between the two cylinders having its edge parallel to the axis of the two cylinders. In front and parallel to the two first mentioned cylinders is a

feeding roller. One end of the hide to be split is attached by pins to this feeding roller, and the hide is partly wound on it, the other end being placed in the space between the two first-mentioned cylinders. By these the hide is brought against the fixed knife and is split. The feeding roller is revolved in its progress by a friction lever, so that any degree of tension may be given to the hide as it is drawn off. The knife is stationary.

[Printed, 6d. Drawing. See *Repository of Arts*, vol. 12 (*second series*), p. 8; *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 71; *Smith's Chemical Reports*, 7th Report p. 300.
See also Specification, No. 2490.]

A.D. 1810, September 7. -- N° 3575.

DYER, JAMES C. -- "A machine for cutting or removing all
" the various kinds of furs which are used in hat-making from
" the skins or pelts, and for cutting the said skins or pelts into
" strips or small pieces." In the frame of this machine is hung
a large drum-shaped wheel turning freely on its axis. It is com-
posed of two metal wheels, on the peripheries of which a rim of
wood is securely fitted. This wooden rim "is divided into equal
" spaces on each side round its circumference, and grooved out
" therein extending from its opposite sides towards its centre, so
" as to diverge a little from the line of its axis, and thereby form
" angles with each other and with the axis of the said wheel." In these grooves cutters made of steel are fitted so as to project
from the smooth surface of the wood. Across the machine in
front of the drum wheel extends a knife made of a straight plate
of steel, its edge being parallel to the axis of the wheel. It is
fitted in a frame, which allows of its moving freely backward and
forward from the wheel, to which it kept steadily pressed by
springs fastened behind it. Above the straight knife are the
feeding rollers, which revolve once while the drum wheel revolves
seven times. "The skin or pelt intended to have the fur cut or
" removed therefrom must have one end of it placed between the
" said feeding rollers with fur side downwards, and the drum
" wheel being made to revolve the skin will be advanced to the
" drum wheel, so that its end will be carried just over the edge
" of the straight knife, where the said cutters in the said wheel
" will meet it as aforesaid, and cut off such part of the skin as
" shall have advanced beyond the edge of the said knife, and at
" the same time the fur will be left on the back side of the knife

“ as the skin is thus cut off and carried away from it by the
“ action of the said cutters against the straight knife.”

As the edges of the cutters and knife are brought in contact by the revolution of the drum wheel, they form acute angles with each other, and being pressed together by the action of the springs on the knife they cut the skins on the same principle that the blades of shears act in cutting. And the revolution of the feeding rollers being so much slower than that of the drum wheel, very little of the skin will be presented each time to the cutters, and the skin will be cut in thin strips. A curved plate is fastened to the knife frame to receive the fur as it is cut off.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 19 (*second series*), p. 321; Rolls Chapel Reports, 8th Report, p. 82.]

A.D. 1811, March 12.—N^o 3412.

MALLORY, JAMES.—“The method of making certain machines
“ for cutting or shearing the fur from all peltries, and shearing
“ cloth.” By means of a shaft and crank an up-and-down motion is given to a framed piece which rises and falls between vertical guides. The lower part of the framed piece is faced with steel, and presents a flat horizontal surface towards the edge of the knife, which is directed upwards. The knife is adjusted so that the framed piece in its descent shall not actually strike it, but approach with its face very near the edge. On either side of the knife, with their axes parallel to each other and to the edge of the knife, is a pair of grooved or fluted rollers. By means of a lever connected with the framed piece acting on a ratchet wheel fixed on the arbor of one of the back rollers, the back pair of rollers are made to revolve one-thirtieth of an inch at each upward motion of the framed piece. The pelts are sewn or attached together, and passed, fur downwards, between the front rollers over the edge of the knife, and between the back rollers. The rollers are kept together by suitable pressure. On motion being communicated to the framed piece it descends and strikes the skin, causing the knife to cut through the fur, but not through the skin. When the framed piece rises, the lever acting on the ratchet wheel makes the back rollers revolve and draw on the skins, so that when it falls again a fresh edge of fur is presented to the knife. The fur as it is cut is carried away on a web. To accommodate *the pressure of the framed piece to skins of varying thickness,*

the lower part which falls on the skin may be made of small pieces of steel set in a socket, and kept on an even surface by springs set in the back.

A somewhat similar machine is also described for shearing cloth.

[Printed, and Drawing. See Wells Chapel Reports, 5th Report, p. 24.]

A.D. 1811, March 26.—N^o 3420.

DYER, JOSEPH C.—(*A communication*).—A "method of making
" certain machinery for new and improved methods of splitting
" hides and shaving or splitting leather." The invention
consists in methods of adapting machinery to the different
" sizes, thickness, and kinds of skins or leather" to be split,
&c. A press table is placed on a bed supported by framework.
A pressing roller revolves over the table. In front of this
roller is a metallic presser placed on springs which can be
adjusted by screws. The knife is just opposite the end of this
presser, and over the edge of the knife and the end of the
presser is a metallic clamp which is pressed upwards by springs
and can be forced downwards by screws placed over it, so that
it can be adjusted to any distance required from the edge of the
knife. The clamp and presser form a "gauge to hold the skin."
Beyond the knife is a roller to draw the hide forward. The
hide is passed under the pressing roller and the clamp and
attached to the drawing roller. As the roller draws the hide
forward that part of it which is opposite the edge of the knife
rests on the spring metallic presser, and is at the same time
pressed downwards by the metallic clamp. By adjusting the
pressure of the clamp the hide can be split in any proportions of
thickness which may be required. The other part of the invention
consists in an improvement on the machine described in the
specification abstracted (*ante* p. 38, No. 3347), communicated to
the patentee by the inventor of that machine. For white leather or
leather of any delicate colour the cylinders are to be made of bell
metal, which does not stain the leather. It is stated that this
material is apt to spring and give, and that if the size of the
rollers is increased sufficiently to prevent springing there is not
space enough in the angle between the rollers for a knife of the
strength required for some kinds of leather. It is stated that the
inventor has therefore altered the construction of the machine by

placing underneath the upper cylinder a bar or bed instead of a cylinder, and by making the upper cylinder of such a size as will prevent springing. The bed is so constructed as to allow sufficient space for the knife. It is further stated that in some cases to prevent injury to the leather the inventor surrounds the bed and the cylinder with two endless cloths stretched and revolving over two wooden rollers.

[Printed, 1s. Drawings. See Rolls Chapel Reports, 8th Report, p. 85.]

A.D. 1812, January 20.—N^o 3521.

PATTEN, ANDREW, and HANKISSON, CHARLES. — The invention consists in methods of tanning “by the use of pyrolignus or wood acid.” The first method is to lime, hair, flesh, and beam the hides in the usual manner, then to wash them, then to immerse them in weak ooze until they begin to bloom, and after that to immerse them for 10 or 14 days in pyrolignus acid well cleared from all oily or tarry matter. After this steeping they are to be placed in strong ooze or in leys of bark for three or four weeks. The second method is to mix either spent bark, spent fustic, spent American bark, or spent shumac, or any kind of spent wood or sawdust not containing colouring matter likely to stain the leather with pyrolignus. The hides are to be kept in this mixture, and in a mixture of one of the spent materials above mentioned and water on alternate days.

The oily or tarry matter is to be removed from the pyrolignus acid in the following manner:—The acid is to be put in a pan and placed over a fire; a quantity of ground dry spent bark is then to be thrown on to the acid until the surface is covered. The bark on the surface is then to be skimmed off, and more bark thrown on until the surface is again covered. The surface is then to be again skimmed, and the process is to be repeated until about half a pound of bark to a gallon of acid has been thrown in. The skimming is to be continued until the liquor is nearly boiling, after which it is to be allowed to cool and settle.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 20 (*second series*), p. 330. Rolls Chapel Reports, 8th Report, p. 92.]

A.D. 1812, March 24.—N^o 3550.

HART, WILLIAM HENRY. — “New method or machine for *cutting, cropping, or shearing* woollen and other cloths, and

" the fur from peltry." This " invention consists in making the cloth to be shorn pass regularly between some smooth surface and a fixed cutting plate or blade, so that the nap can be cut off by means of a number of light blades moving upwards and downwards alternately, and pressing against the edge of the fixed cutter by gentle but active springs, producing the effect of hand shears." No special machine is described for cutting fur off skins.

[Printed, 8d. Drawings. See Repertory of Arts, vol. 21 (second series), p. 188; Rolls Chapel Reports, 7th Report, p. 118.]

A.D. 1813, July 7.—N^o 3716.

ADAMS, ROBERT.—" A new and improved method of preparing blacking, whereby a higher polish is given, and the leather better preserved than by any hitherto known." This blacking is made by the mixture of forty gallons of vinegar, ninety pounds of ivory black, three gallons of sweet oil, twenty-eight pounds of raw sweet sugar, eighteen pounds of oil of vitriol, twenty-six pounds of gum arabic.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 25 (second series), p. 188; Rolls Chapel Reports, 8th Report, p. 96.]

A.D. 1813, July 14.—N^o 3719.

MOODY, ALEXANDER.—A " method of tanning or dressing white, buff, or loah leather."

[No Specification enrolled.]

A.D. 1814, March 28.—N^o 3796.

MOLINE, JOHN SPARKS.—" An improved method of tanning leather." The invention consists in filtering an infusion of any vegetable tanning matter, except vegetable matter containing catechu and mangrove bark, through canvas, sand, or any other filtering materials, and then inspissating or concentrating the filtered infusion by heat, or by the exposure of a large surface of the fluid to the atmosphere. The method preferred by the patentee is the application of heat by means of steam. The fluid thus concentrated becomes solid, and in this state can be packed and carried about; for use in tanning it is to be dissolved in water.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 31 (second series), p. 208; Rolls Chapel Reports, 8th Report, p. 101.]

A.D. 1815, August 4.—N° 3947.

HARVEY, JOSEPH. — “A machine for better striking and “finishing of leather.” The patentee describes a machine in which a cogged wheel working a pinion on a horizontal shaft drives by four joggles a stamper, which beats the leather laid out on a pile beneath. Another cogged wheel on the same shaft causes to revolve a shaft to which a lever is attached by a universal joint. At the end of this lever is a cogged wheel working in an oblong frame with cog teeth on the inside. The cogged wheel being caused to revolve by the shaft and lever travels round the cog teeth inside the oblong frame, so as to drive the frame backwards and forwards. The frame being screwed into another frame holding a roller works the roller backwards and forwards over the leather placed on a table underneath.

[Printed, 6d. Drawing. See Rolls Chapel Reports, 8th Report, p. 108.]

A.D. 1815, September 9.—N° 3957.

ASHMORE, THOMAS.—“A new mode of making leather.” The patentee states that he employs in making leather, first, soot of all kinds, “secondly, the oils and other empyreumatic liquors (excepting pyroligneous acid), whether produced by the distillation of bones, or of any other animal matters, or by the distillation of wood, of peat, of resins, or of any other vegetable matters, or by the distillation of coal, of coal tar, of petroleum, or of any other bituminous matters. Thirdly, all kinds of empyreumatic gasses produced by the combustion or distillation of animal or vegetable, or of bituminous matters. Fourthly, all kinds of liquors in which the above empyreumatic gasses have either been washed, or with which they have in any other way been kept in contact.”

The patentee describes methods of making tan liquor with soot and with tar. A small quantity of quick lime is to be mixed with the soot and moistened with cold water and hot water is then to be poured on. With tar a larger quantity of lime is to be used, and then hot water poured on containing dissolved sal ammoniac.

For tanning the liquor is to be filtered, and the skin immersed alternately for certain intervals in the liquor and in lime water.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 31 (*second series*), p. 23; *Rolls Chapel Reports*, 8th Report, p. 111.]

A.D. 1818, June 22.—N° 4274.

NEILSON, JOHN.—“Improvement in the tanning and tawing
“ of hides and skins, and in the dyeing or coloring of leather
“ and other articles.”

[No Specification enrolled.]

A.D. 1819, January 4.—N° 4326.

TANNER, CHARLES.—The invention consists in a method of preserving or curing raw hides and skins. The materials used are soap-maker's spent or salt lees concentrated by boiling down, or reduced to a solid substance by evaporation, or converted into the substances known as black ashes or English ashes; or “the
“ spent or waste ashes from soap makers' Barilla vats.”

The hides are preserved in two ways, the moist way, and the dry way. When preserved in the moist way they are immersed for ten hours in liquor made of spent or salt lees, and any one of the concentrated substances above mentioned. When preserved in the dry way the surface of each hide is covered with any one of these substances ground into small pieces; the hides are placed in heaps, and afterwards tied up either separately or in pairs. It is stated that for the dry way charcoal may advantageously be mixed with the ground substance.

[Printed, *4d.* No Drawings. See Repertory of Arts, vol. 35 (*second series*), p. 136; Rolls Chapel Reports, 8th Report, p. 120.]

A.D. 1819, June 19.—N° 4380.

NEILSON, JOHN.—The invention consists in a method of tanning and colouring “a certain kind or description of leather.” The patentee states that he uses certain species of each of the following plants:—Saxifraga or saxifrage, rheum or rhubarb, geranium or geranium, heuchera, polygonum, and rhodiola. For making the leather these plants are cut, bruised, or ground, either in a green or a dry state, and are applied to the hides and skins by means of an aqueous solution according to the usual method of tanning. It is stated that in the saxifrage and heuchera species the whole plant contains the substances making the leather; but that in the other species these substances are to be found chiefly in the roots.

It is further stated that a liquor useful in dyeing may be made from the saxifrage, heuchera, and rhodiola species by infusing

them in the same way as nut galls, sumach, or oak bark after they have been cut, bruised, or ground.

[Printed, 4d. No Drawings. See *Repertory of Arts*, vol. 42 (*second series*), p. 14; *Rolls Chapel Reports*, 8th Report, p. 181.]

A.D. 1819, July 10.—N° 4390.

GOOD, WILLIAM.—“An improvement in the art of tanning “hides and skins, and barking or colouring netts, sails, and other “articles by the application of certain materials hitherto unused “for that purpose.” The patentee states that he has discovered that the trunk, roots, limbs, branches, and leaves of the oak, whether tree, pollard, coppice, or underwood, possess tanning properties. The method of preparing tanning liquor is to reduce such of these articles as are large enough for sawing to sawdust, and to chop those which are smaller into small pieces, and to boil the sawdust or chopped pieces in water. After the hides or skins have been partly tanned in liquors thus prepared, oak bark or “tar liquor” [? tan liquor], or both, are to be added to complete the tanning.

For barking or colouring nets, sails, &c., equal quantities of oak branches and spent bark are to be boiled together, and the nets, &c. are to be boiled in the liquor thus prepared.

[Printed, 4d. No Drawings. See *Repertory of Arts*, vol. 36 (*second series*), p. 207; *London Journal (Newton's)*, vol. 1, p. 97; *Rolls Chapel Reports*, 8th Report, p. 133.]

A.D. 1820, June 6.—N° 4473.

KENDRICK, WILLIAM.—“The manufacture of a liquid from “materials now considered useless for that purpose, and the “application of the same liquid to the tanning of hides and other “articles requiring such process.”

[No Specification enrolled.]

A.D. 1820, December 5.—N° 4514.

KENDRICK, WILLIAM.—The invention consists in a method of extracting the tanning matter from oak bark, sumack, and other substances. Steam is generated in a boiler up to a pressure of about 8 to 12 pounds upon the “cubit inch.” A perforated pipe or pipes, or chamber, is or are connected with the pipe which conveys the steam away from the boiler, and also con-

netted with a vessel in which the bark is placed. The bark is exposed to the action of the steam, a small quantity of warm or cold water being put to the bark, &c.

[Printed, *Ad.* By Drawing. See Register of Arts, vol. 41 (*second series*), p. 117; London Journal (*Newson's*), vol. 2, p. 171.]

A.D. 1823, April 22.—N^o 4784.

MILLBURY, FRANCIS (LYNN).—"Certain improvements in tanning." According to this invention three rectangular frames are used, a middle frame and two exterior frames. One of the exterior frames is laid on the ground, and a hide is stretched over its uppermost side. The middle frame is placed over this; then a hide is placed over the middle frame, and the second exterior frame is then placed over the middle frame and hide. By means of screw bolts the frames are nipped together, and the hides are tightly nipped between the frames. The frames are raised to a vertical position, and tan liquor is then introduced between the hides by means of an aperture in the middle frame; this liquor tans the hides by percolating through them.

[Printed, *Ad.* Drawing. See Register of Arts, vol. 1 (*third series*), p. 279; London Journal (*Newson's*), vol. 8, p. 288; Mechanics Magazine, vol. 4, pp. 397 and 408; also vol. 8, p. 280; Register of Arts and Sciences, vol. 8, p. 280; Engineer and Mechanics Encyclopedia, vol. 2, p. 68.]

A.D. 1823, May 31.—N^o 4793.

MILLS, JOHN, and FAIRMAN, HERMAN WILLIAM.—(*A communication*).—"Certain improvements in rendering leather, linen, flax, sail-cloth, and certain other articles waterproof." This invention claims to make fabrics waterproof by a composition "which becomes sufficiently hard and dry to prevent stickiness, yet retains a desirable degree of elasticity & pliability, without any disagreeable smell." This composition "consists of a combination of pipeclay & oil varnish." The varnish is made of linseed oil, saccharum saturnum, burnt umber, white lead, and white pumice stone, pounded, ground, and boiled together over a slow fire, and clarified and mixed with a quantity of pipeclay and glue water. The whole composition is then ground in a colour mill. Colour is given to the varnish by adding ground oil colours. The leather, &c. is extended in wooden frames and the composition spread on both sides with large knives. When

dry it is rubbed with pumice stone and water, washed, and dried again. When dry, rosin and turpentine mixed with some of the varnish, and strained through muslin, may be brushed over the leather, &c. to give a gloss or lackering.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 46 (*second series*), p. 289; London Journal (*Newton's*), vol. 6, p. 119; Register of Arts and Sciences, vol. 2, p. 299.]

A.D. 1823, July 24.—N° 4818.

GILL, RICHARD. — The invention consists in a method of preparing, dressing, and dyeing sheepskins and lambskins with the wool on. The skins after washing are cleansed on the flesh side with a knife such as is used by parchment makers, called a parchment knife. A mixture of shumac and hot water is next worked into the flesh sides with the same kind of knife. They are then dried, after which the wool is washed with soap and water. Skins intended for white rugs are then again dressed with shumac and hot water, and are afterwards rubbed with pumice stone and moistened with water containing a slight quantity of indigo. After this the wool is bleached over a pan of burning brimstone.

Skins intended for brown rugs, after being dressed, as above mentioned, are dyed in a preparation of fustic, peachwood, and water, and afterwards washed in cold water. They are then dried, dressed with shumac and hot water, and rubbed with pumice stone.

[Printed, 4d. No Drawings. See London Journal (*Newton's*) vol. 8, p. 12; Register of Arts and Sciences, vol. 2, p. 9.]

A.D. 1823, July 31.—N° 4825.

BAINBRIDGE, JOHN. — (*A communication.*) — The invention consists in a method of shearing wool and fur from skins, and also of shearing cloths and other fabrics, the principal improvement being in the adaptation of saw blades, in the place of the usual cutting knives or cutting cylinders. The skin or fabric to be shorn is held over a long roller, one end of the skin being passed between this roller, and another roller placed a little below it. A rotatory motion is given to these rollers by a winch and toothed wheels, and the skin is thus drawn over the upper roller. There are two cutters placed along the upper roller pressing against the top of it. One of these cutters is under the other. The plane of the

upper cutter is horizontal. The lower cutter is inclined upwards at a small angle, "and should project about the one twenty-fourth " part of an inch beyond the edge of the upper cutter," the teeth of the two cutters being close together. A short lateral sliding movement is given to the upper cutter by means of a tappet or ziz-zag wheel placed on the shaft of the upper roller, and working in a notch in the bar which holds the upper cutter. The lower cutter is stationary.

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 7, p. 233.]

A.D. 1823, November 22.—N° 4872.

SLATER, JOHN.—The invention is stated by the patentee to consist in improvements in the machinery for cutting or grinding wool or cotton from the surfaces of cloths, and for removing hair or fur from skins. The skin or cloth passes between a small roller, and the edge of a "plate or straight edge," and is presented to a roller covered with sand, emery, or other similar substance, which grinds or cuts the hair or wool, &c. from the surface of the skin or cloth. The skin, &c. is also acted on by a carded roller.

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 9, p. 406.]

A.D. 1824, January 19.—N° 4894.

FLETCHER, HOWARD.—"Certain improvements in tanning " hides and other skins." The invention consists "in tanning " hides or skins in air or water-tight vessels or pits, by the " application of internal pressure."

The hides, &c., are immersed in tan liquor in "air or water-tight vessels," on which lids are screwed down, so that the whole is air and water-tight. Air may be forced into the vessel by a condensing air syringe, but the pressure apparently is best produced by filling with tan liquor a long perpendicular pipe communicating with the air-tight vessel, and rising to a considerable height above it. The head of this pipe is fitted into a large cask or vessel into which tan liquor is poured, so as to keep a constant supply of liquor in the tube.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 3 (third series), p. 133; London Journal (*Newton's*), vol. 8 p. 117.]

A.D. 1826, August 1.—N° 5397.

KNOWLYS, THOMAS JOHN, and DUESBURY, WILLIAM.—“ Certain improvements in tanning.” According to this invention the hides are suspended edgeways by means of hooks in air-tight vats, “ filled all but two or three inches with tan liquor.” The vat is then closed so as to be perfectly air-tight. A tube fitted into the vat communicates with an air-pump, and by this the air is exhausted from the vat, so that the tan liquor readily enters the pores of the hides.

It is stated that “ the liquor should be drawn off or pumped away every day, and the hides left to hang an hour or more in the vat, so that the liquor may drop from them, and that they may imbibe the air again.”

[Printed, 8d. Drawing. See Repertory of Arts, vol. 5 (*third series*), p. 46; London Journal (*Newton's*), vol. 1 (*second series*), p. 159; Register of Arts and Sciences, vol. 1 (*new series*), p. 100. Engineer and Mechanics' Encyclopædia, vol. 2, p. 64.]

A.D. 1828, June 4.—N° 5662.

WETTERSTEDT, BARON CHARLES.—“ A liquid or composition for waterproofing and strengthening leather.” For the soles or under part of leather sixteen pounds of rosin and five pounds of tallow are boiled together, and one gallon of boiled linseed oil and one and a half pounds of turpentine, in which one ounce and a half of india-rubber has been dissolved is added to the mixture. For harness and the upper parts of shoes, &c., one gallon of neatsfoot oil, six pounds of tallow, one pound of hog's lard, and half-a-pound of beeswax are boiled together. To this mixture are added three pounds of turpentine with three ounces of india-rubber dissolved in them. The composition may be applied with a brush or otherwise.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 9 (*third series*), p. 224; London Journal (*Newton's*), vol. 3 (*second series*), p. 263.]

A.D. 1828, July 3.—N° 5669.

BARING, JOHN.—(*A communication.*)—“ A new and improved mode of making or manufacturing machines for cutting fur from skins for the use of hatters, to be called Cant's twist blades fur cutter.” This invention consists in an improved mode of *making the rotary blade* in fur cutting machines, and improve-

ments in the motions and gearings connected with it. The rotary knife or "cant twist cutter" are made as follows:—"Two steel blades are riveted on two squares of a four-sided bar of iron, one blade on each square," and then the whole is heated and twisted together so that the blades form spiral knives. This "cant twist cutter," is placed in the machine behind the ordinary standing or ledger blade "with its centre of motion level with the edge of the ledger blade; by this means the revolving or cant twist blades are so elevated above the standing or ledger blade that in the revolution they have an oblique inclination or cant upon the standing blade, which gives them a back bevel to the edges of the cant twist blades which gives them sharper and better cutting edges; this elevation or cant of the twist blades puts them in such a position towards the ledger blades that the shears do not choke in cutting very thick skin." On the shaft of the cant twist cutter are loose pulleys for giving motion to the feeding rollers by means of cog wheels gearing together. These loose pulleys are driven by bands passed round small fast pulleys fixed on the axle of the main motion shaft. One band should be crossed so as to give reverse motions to the feeding rollers. The main motion shaft is formed with two cranks from each of which a sweep rod is suspended, and connected by joints to a treadle. The main motion shaft is thus driven by the foot of the workman, and the dead points of action overcome by fly wheels affixed to the main axle.

[Printed, Ed. Drawing. *New London Journal (Newton's)*, vol. 8 (second series), p. 86; *Bella Chapel Reports*, 7th Report, p. 127.]

A.D. 1828, (October 9.—No 5716.

DUXBURY, HENRY.—"A new machine for splitting hides and skins."

According to the invention described, a roller revolving on its axis is placed underneath a large wheel the central line of the axis of the roller being horizontal and "in the same vertical plane" as the knife herein-after described. The surface of the roller is concave, the curve exactly corresponding with the curve of the circumference of the wheel. Round the circumference of the wheel is fitted a circular knife, the blade of which is parallel with the axis of the wheel. The axis of the roller is placed on bearings which can be adjusted by screws, so that the height of the roller can be adjusted.

and so much space left between the roller, and the circular cutting edge as is required. The hide to be split is spread over the roller, one end being fastened into a groove in the roller. The roller and wheel are caused to revolve together by means of an endless strap working round a pulley on the axis of the wheel, and round the axis of a worm working in a cog wheel, which turns the roller; the hide is thus presented to the revolving circular cutter by which the hide is split. The hide is held down during its passage by a broad flat bar of iron placed edgewise over the roller. The lower edge of this bar has a convex curve which corresponds with the concave curve of the roller. The bar is set in grooves, which allow it to rise and fall during the progress of the skin.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 8 (*second series*), p. 300; Register of Arts and Sciences, vol. 3 (*new series*), p. 337; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 72.]

A.D. 1830, August 5.—N° 5970.

HANCOCK, THOMAS.—Improvements in the manufacture of certain articles of dress, &c., and in the method of rendering certain manufactures and substances waterproof.

The improvements in the manufacture of articles of dress consist in making them of a substance composed of hair, wool, cotton, or other fibrous matter mixed with liquid caoutchuc.

The improvements in the method of rendering substances waterproof “consist in the application of liquid caoutchuc, having “mixed with it as much of the colouring matters herein-before “mentioned,” viz.: lamp black, chome yellow, blue verditer, and Venetian red, “or others, such as extracts of cochineal, logwood, “indigo, lake colour or red or black ink, as shall be thought desirable to give it any required tint, well stirring it & mixing it “together, & using no more of the colouring matter than is “necessary.” The composition is laid on with a spatula or other instrument, or diluted with water and applied with a brush. Such substances as admit of it should be rolled and pressed before and after the process.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 295.]

A.D. 1830, October 20.—N° 6011.

JACQUEMART, FRANCOIS CONSTANT.—(*A communication.*)—“*Improvements in tanning certain descriptions of skins.*” The

patentee states that his invention relates to the manner of "tanning, preparing, and dressing hares, cats, rabbits, and sea rats skins." The method is described as follows:—"Take the skins, lay them open, pull off the long hair, rub them with mercurial aquafortis, and put them into a heat of about forty-five or fifty degrees by Reaumur's thermometer; I then cut the hair off, and then take these skins stript of their hair, lay them in the tan preparations, when they have been dried so high as forty-five or fifty degrees. In order to bring them again in their natural state, I put them into a salt water mixed with blood for about six or seven days, afterwards take them out of it to put them into a water mixed with blood in the proportion of about one-tenth part of blood to nine-tenth parts of water, to get the salt out and deaden or render them supple, remove them from that lye, and put them into a dead lime-water to cause them to swell or thicken, and put them again for three days into a lime-water stronger than the former to obtain a greater swelling or thickening. To succeed in it, I take one pound of salt potash and eight ounces of orpiment, that I melt together for one hundred skins, then I throw them into a lime bath about one-fifth stronger than the former one, and leave the whole for twenty-four hours," "after which the air will drop off directly." The patentee states that when the skins have been thus prepared, he tans them in tan liquor containing a certain quantity of sulphuric acid, and afterwards (apparently) in ordinary tan pits.

Another method is thus described:—"I take the skins, lay them open, pull off the long hair, steep them in a bucket of clean water, and give them the first dressing; I put them again in the same water during twenty-four hours, take some lime, infuse it, and add to it for one hundred skins four ounces orpiment, which I mix with the lime; I then lay some lime upon each on the side of the flesh to make the hair drop off, and pick or remove the loose flesh off on the fleshy side in a contrary way to the grain of the hair to get off the inner skin, I put them then into a new lime water, and add to this lime water for one hundred skins two pounds of alum and one pound of salt potash, the whole dissolved together. I let the skins remain in the lime water for the space of eight days; take them out of the lime water, and dress them every day, wash them thoroughly, put them into a vessel with the tan, and stir or agitate them four or

"five hours every day," for five or six days. The skins are afterwards put, first, in a vessel with fresh tan and a small quantity of sulphuric acid, then in tanning stuff containing a small quantity of alum, and then (apparently) in ordinary tan liquor. The patentee further states that to prepare the skins with the fur on, he washes them in water, gives them "the first dressing," steeps them in water, immerses them in alum and lukewarm water, and in lime and water, and then tans, curries, or chamois's them in the ordinary way.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 1 (*new series*), p. 15; London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 410; Register of Arts and Sciences, vol. 6 (*new series*), p. 68; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 66.]

A.D. 1830, November 4.—N° 6029.

BELL, ALEXANDER.—"Certain improvements in machinery for removing wool or hairs from skins." "In preparing the down or beaver for the manufacture of hats it is necessary before shearing or cutting the down or beaver from the skins to draw out the coarse long hairs which stand up above the down. This has been usually done by the hands of women and children, and is technically termed pulling." The object of the present invention is, it is stated, to supersede that tedious process by machinery. A pair of fluted rollers conduct the skin, with the fur downwards, forward in a flat sheet under a breast bar over the edge of which it is drawn back by means of a weighted roller. The hairs of the skin in passing over the edge of the breast bar project towards and are brought into contact with a pair of revolving pincers. These pincers "consist of a pair of rollers round each of which is coiled a spiral rib, and the edges of these ribs running in contact with each other and taking hold of the ends of the hairs like pincers as they go round draw the hairs out of the skin and leave the soft down thereon untouched." It is desirable to cover the spiral rib of one of the rollers with some soft substance in order to afford elasticity at the points of contact.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 8 (*second series*), p. 64; Register of Arts and Sciences, vol. 6 (*new series*), p. 77; Rolls Chapel Reports, 7th Report, p. 184.]

A.D. 1831, October 7.—N° 6178.

DRAKE, WILLIAM. — "An improvement or improvements in tanning hides and skins." According to the patentee's method

two hides are sewn together so as to form a bag. The bag thus made is hung on pegs between two barred racks, which are drawn together with screws "sufficiently near to each other to prevent" the bag when filled with liquor from distending, and thus being "stretched out of its proper shape." The bags are then filled with cold tan liquor.

"When the hides are observed to feel hard and firm, and every part of them appears equally damp and wet" the temperature of the tanning apartment is gradually raised from 70 to 150 degrees Fahrenheit, so that evaporation is obtained on one side of the hides.

[Printed, 6d. Drawings, See Repertory of Arts, vol. 18 (*third series*), p. 325; London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 24; Register of Arts and Sciences, vol. 7 (*new series*), pp. 100 and 167. Engineers' and Mechanics' Encyclopedia, vol. 2, p. 65.]

A.D. 1832, March 15.—N° 6244.

WALMSLEY, JOHN.—"A machine for cutting off the fur or hair from beaver and other skins." The patentee describes a machine in which motion is given to a shaft at one extremity of which is placed a fly wheel. One of the spokes of this wheel carries an eccentric point to which a connecting rod is attached which gives a backward and forward motion to a carriage moving on guides and holding a cutter. On the shaft is placed a "tappet or scrole" with two projections which force down, at each half revolution of the shaft, a tooth in a ratchet wheel, thereby causing the ratchet wheel to revolve. The ratchet wheel is placed on the shaft of a fluted roller, which by means of spur wheels gives motion to another roller placed just above it, and weighted by a lever and weights. A rest or block of iron is placed underneath the cutter, and the skin passes over this rest and under the cutter while being cut, one end of the skin being passed between the rollers, so that it is gradually drawn forward over the rest by the revolution of the rollers. The skin is held firmly against the rest by a presser which acts by its own weight, and is raised by an arm resting against a dog lifted and let fall alternately by the teeth of the ratchet wheel, so that the presser is taken off the skin at the same period that motion is imparted to the drawing rollers, and is brought against the skin as soon as the skin has traversed over the rest by the amount of a tooth in the ratchet wheel. The fur is cut by the cutter traversing to and fro over it.

the motion being given to the skin at the time when the cutter is at the end of each traverse and clear of the skin. The fur when cut is received on an endless cloth passing over two rollers, one of which receives motion from the lower of the fluted roller by means of a band.

[Printed, 10*d.* Drawing. See Repertory of Arts, vol. 14 (*third series*), p. 205; London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 342; Register of Arts and Sciences, vol. 7 (*new series*), p. 295.]

A.D. 1833, March 28.—N^o 6403.

TERRY, CHARLES.—“Improvements in producing leather from
“hides and skins.”

[No Specification enrolled.]

A.D. 1833, December 21.—N^o 6533.

NEUMANN, JOHN PAUL.—(*A communication.*)—“Certain improvements in making or producing leather from hides and other
“skins.” The invention consists “in employing the hop plant
“whether root, stalks, or leaves, or any part thereof, either in a
“green or dry state,” a dry state being preferred by the patentee. The mode described of using the plant for tanning is “to grind
“or reduce it as fine as practicable,” and then to use it either alone, or “mixed with other—matter,” (sic) in the same way as ordinary tanning substances are used.

[Printed, 4*d.* No Drawings. See Repertory of Arts, vol. 2 (*new series*), p. 78; London Journal (*Newton's*) vol. 5 (*conjoined series*), p. 51.]

A.D. 1834, January 13.—N^o 6538.

PLANT, FREDERIC.—“An improved fur cutting machine.” In the machine described a driving wheel driven by a treadle gives motion to a fly wheel by means of a pulley and band. On the shaft of the fly wheel is an excentric working in an excentric rim with which rim a stirrup is connected. To this stirrup a connecting rod is attached fitting at the end opposite the stirrup into a universal joint in the end of a right angle crank moving on a pivot placed at the angle. To the other end of this crank one end of a knife or cutter is attached by a pivot, the other end of the knife being attached by a pivot to a short arm moving on a pivot. The excentric working in the universal joint gives by means of the crank a *sawing motion* to the knife. The skin is placed on an endless

web passing over rollers. There are two pairs of rollers, one pair vertically over the other. Between these two pairs the knife works, and there is a bed or rest opposite the knife to keep the skin forwards towards the knife; underneath the knife is a scraper pressed upon by a spring so as to keep the fur down for the knife to act on it.

The endless web with the skin on it passes between the two lower rollers; the skin is also passed between the two upper rollers and is drawn vertically up by them so as to be exposed to the action of the knife. The fur when cut falls on to the endless web.

A toothed wheel on the shaft of the fly wheel works in a pinion to which a catch is attached by a crank pin; the catch drives a ratch plate which causes one of the upper rollers to revolve with a pause for every movement; the catch and ratch plate being so adjusted that the skin is drawn up at the moment that the knife by the sawing motion above mentioned recedes from the skin. The axis of this roller passes through the centre of the ratch plate. On the end of this axis is a lever arm with a handle at one end and a pin at the other passing through the ratch plate, so that the roller and plate revolve as one, with the taking up movement already described. If desired this pin can be taken from the hole, so that the roller can be turned round by the lever handle without the taking up movement.

[Printed, 18d. Drawing. See *London Journal (Newton's)*, vol. 14 (*condensed series*), p. 167.]

A.D. 1834, May 22.—N° 6609.

EDMONDS, THOMAS.—“A certain process or method of manipulation and treatment for the preparation of leather, whereby “ it becomes less pervious to water and preserves better its “ pliability during use than does leather prepared by the ordinary means.” This invention consists in applying to leather, previously tanned, the following processes :—

1. A solution, at nearly boiling heat, of alum, gum arabic, and gum tragacanth dissolved in water is applied with a sponge to both sides of the leather, which, while still damp, is pressed between hard smooth surfaces as glass, marble, &c. It is then passed through a rolling machine, one cylinder of which is heated and the other kept cool. The degree of pressure in both cases should be adjustable.

2. A preparation of melted hogs lard and deer suet mixed while hot with rosin, bees-wax, and Burgundy pitch melted in sperm oil, then strained and mixed with turpentine and spirits of wine is applied hot to the dressed side of the leather. The leather while damp is passed through rollers.

3. The skin is laid on a slab of marble and a fine powder made of triturated burnt alum, chalk, or pipe clay and steel filings is applied with the flattened face of a piece of pumice stone to the leather.

4. Such colouring matter as corresponds with the colour of the leather is mixed with a solution of white wax in spirits of wine and brushed over the leather which is then passed through the rollers.

[Printed, 4d. No Drawings. London Journal (*Newton's*), vol. 6 (*conjoined series*), p. 109.]

A.D. 1835, May 20.—N^o 6839.

PATTERSON, WILLIAM.—“A new material for tanning hides
“ and skins, which is also applicable to other purposes.”

[No Specification enrolled.]

A.D. 1835, October 22.—N^o 6913.

PATTERSON, WILLIAM.—The invention consists in tanning hides by means of tannin obtained from the roots, stems, and branches of the blackberry. The patentee states that these roots &c., which for preference should be obtained in the spring, are to be dried by natural or or artificial heat, ground in a bark mill, and then macerated in water.

With the tannin matter or liquor thus produced, hides, &c. are to be tanned in the ordinary way. It is further stated that the tannin may be obtained by decoction instead of maceration.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 7 (*new series*), p. 100; London Journal (*Newton's*), vol. 10 (*conjoined series*), p. 23; Patent Journal, vol. 7, p. 123; Moore's Privy Council Cases, vol. 6, p. 469; Jurist, vol. 13, p. 593; Extension applied for but not granted.]

A.D. 1835, December 7.—N^o 6946.

SIEVIER, ROBERT WILLIAM.—“An improved waterproof cloth
“ or fabric, made either elastic or non elastic, applicable to various
“ useful purposes, and for an improved manufacture of water-

"proof hats and caps. This invention, so far as it relates to leather, consists in the preparation of "an elastic waterproof fabric by uniting leather and india-rubber." For this purpose india-rubber dissolved in spirits of turpentine or other proper solvent is spread over the surface of a sheet of india-rubber about one-eighth of an inch in thickness. A piece of thin leather of the same size is then pressed upon the surface of the sheet of india-rubber until the two are perfectly dry and united. The fabric thus prepared will be nearly inelastic. "By the application" of heat to about the 180th degree of Fahrenheit's thermometer the india-rubber will partially collapse and cause the "leather to have a corrugated surface similar to Moroccan leather." The fabric will then be elastic and waterproof and suitable for the manufacture of boots, shoes, belts, &c.

[Printed, &c. No Drawings. See Landon Journal (Newton's) vol 18 (continued series), p. 316, Ellis Chapel Reports, 7th Report, p. 108.]

A.D. 1866, January 11. N° 6077.

HILKIN, FASHION. "Certain new and improved processes of "tanning." The invention consists in a method of preparing tanning liquors from gum kino, divi divi, and terra japonica. The patentee states that solutions of divi divi are to be prepared in the same way as ordinary bark liquors made in vats or "leeks" (y leeks). The gum kino and terra japonica are, if in large pieces, to be broken into small pieces and steeped in cold water or cold weak tan liquor for three days, after which the whole is to be put into a "rubbing tub," or else they are to be soaked in hot water or liquor in the tub itself, which has a lid or "house cover" just "so much smaller to it in circumference that when not kept up by" the materials in the tub it will readily fall "to a projection or stopper above four inches from the bottom. On the under side of this cover are fastened spikes. A square shaft passes through a square hole in the cover "and drops into a recess, in the bottom" of the tub large enough to allow the shaft to turn freely within it." By this shaft the cover is turned round so as to work and break up the gum kino, &c.

For tanning, the patentee states that he uses solutions of different strengths, the strongest being for sole leather, and the lighter for dressing leather, "rarely using the gum kino or bark

"terra japonica at all in the manufacture of dressing leather, or
"any sort of leather, in respect of which colour is an object."

A small quantity of oak bark is to be added to the liquors for tanning. The patentee states that the above-mentioned materials may also be combined in any proportions with oak bark, or may be combined in certain proportions with either mimosa bark, or kermes root, valonia and oak bark, or shumac and oak bark.

It is further stated that leather already tanned may be retanned or improved by being placed in the above-mentioned liquor of the strength required for sole leather.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 6 (*new series*), p. 297.]

A.D. 1836, February 16.—N^o 7004.

WESTHEAD, JOSHUA PROCTER.—"An improved method of
"cutting caoutchouc or india-rubber, leather, hides, and similar
"substances so as to render them applicable to various useful
"purposes." This invention is for cutting hides, &c. "into a
"band, tape, or fillet by means of a revolving or other cutter
"acting on the exterior edge of such materials and regularly
"cutting the same in a spiral or helical direction towards the
"centre." From the driving shaft of the machine a revolving
motion is conveyed by means of pulleys, rollers, and bands to
another shaft, parallel to and above it, carrying two circular
clicks or cutters. A bevil wheel at the end of the driving shaft
conveys by means of bevils a rotatory motion, which may be reversed
at pleasure, to another shaft at right angle to the driving shaft.
From the latter shaft by means of pulleys, rollers, and bands, a
slower rotatory motion is communicated to another shaft, which, by
an arrangement similar to that used for traversing a slide rest in
lathes of ordinary construction, gives a traverse or end motion
to a carriage travelling backwards and forwards below the two
cutters. The direction of the motion of the carriage is reversed
by reversing the rotatory direction of the bevil shaft. On
this carriage are two supports revolving at right angles to the
circular cutters, and on these supports the disc of leather
or other material to be cut is fastened. As the leathern disc
revolves on the support and the motion of the carriage brings its
exterior edge in contact with the cutter, it is cut in a spiral direc-
tion producing a long tape or band. When the centres of the

leather discs have been brought up to the cutters and all the leather cut the machine is stopped, fresh discs fastened on, and the motion of the carriage reversed.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 6 (*new series*), p. 206; also vol. 12 (*new series*), p. 107; London Journal (*Newton's*), vol. 18 (*continued series*), p. 280; Webster's Patent Law, pp. 28 and 107 (also p. 128, cases 140 and 145); Carmichael's Reports on Patent Cases, vol. 2, pp. 435 and 434; Law Journal (*Chancery*), vol. 8 (*new series*), p. 89; Beavan's Reports vol. 1, p. 257; Billing on Patents, p. 150.]

A.D. 1836, February 18.—N^o 7008.

CHAPLIN, FREDERICK.—“An improvement in tanning hides and skins of certain descriptions.” The invention is confined to the hides, &c. of bulls, oxen, cows, buffaloes, horses, to “East India kepi,” and to “market calf skins.” According to the invention described each hide or skin after being unhaired and prepared “is to be made into a bag by carefully sewing the edges together with small but strong packthread, leaving only one aperture at which liquor may be introduced, or more skins than one may be similarly formed into a bag. They are then to be washed by dipping once or twice in a weak ooze or tanning liquor to free them from any dirty matter which may adhere to the surface and immediately afterwards filled with strong tanning liquor.” “When a hide or skin is full of liquor the opening through which the liquor has been introduced is not (Qy.) to be closed by tying the sides of the orifice together with a piece of string, so that the bag thus formed and full of liquor or ooze, may be turned in all directions which is important to the good and equal tanning of the hides and skins.” By the words “is not to be closed” the patentee apparently means “is to be closed” as would appear from the context, and also from his subsequent statement that a certain quantity of liquor will drain through the hides and escape through the seams, and that this liquor “should be replaced in the hide or skin by frequently untying the mouth of the orifice, and introducing fresh liquor, so as to keep the hide or skin as nearly as possible always full of liquor, carefully tying up the opening after each filling, in order that that part as well as all other parts may occasionally be turned downwards.” The bags are placed on an alley between the vats and filled with a common jet, no apparatus being used. Either side of the hide may be outwards, the patentee preferring that the flesh side should be outwards.

The patentee states that he uses liquor prepared from terra japonica or catechu, not however confining himself to that. When the terra japonica is used for the first time the liquor is prepared by pouring hot water on the terra japonica stirring up the mixture, and afterwards adding common tanning ooze. When an old ooze is to be renewed, the liquor is withdrawn, leaving the sediment. Fresh terra japonica is then added to this sediment, some hot water (apparently) poured on, and the mixture stirred up, after which the liquor which was taken out is put in again. The sediment in each vat should be well stirred up before the bags are filled. Hides, &c. for soles should after tanning be placed for a very short time in bark ooze. The same for dressing leather should after tanning be immersed in a mixture of sumach and bark ooze.

[Printed, *4d.* No Drawings.] See Repertory of Arts Vol. 6 (*new series*), p. 93; London Journal (*Newton's*), vol. 10 (*conjoined series*), p. 96). Mechanics' Magazine, vol. 28, pp. 284, 316, 317, 363, and 374.]

A.D. 1836, September 15.—N° 7183.

COX, WILLIAM HINKES.—“An improvement or improvements in tanning hides and skins.” The invention consists in applying to bags made of hides, &c. which are to be tanned “a covering of fibrous materials, which giving support to the hides or skins on one side when pressed, and acted on the other side by the tanning liquor, also freely permits the tanning liquor to percolate through and pass away.”

The hides, &c. are made into bags and suspended on hooks. Each bag is then surrounded with a covering of coarse canvass. The bags are filled with tan liquor by supply pipes entering the top of each bag.

[Printed, *4d.* No Drawings. See Repertory of Arts, vol. 9 (*new series*), p. 343; London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 28.]

A.D. 1836, October 6.—N° 7202.

JONES, SAMUEL TONKIN.—“Certain improvements in the tanning of hides and skins.” The invention consists “in the application of certain substances to the surfaces of hides or skins under operation, which substances shall be capable of draining or absorbing as well as retaining liquors for the purposes of either draining, absorbing, or injecting, as may be required,” and in submitting the hides, &c., “in combination with the said

"drainers, absorbers, and injections," to pressure in order to dislodge the "spent liquor" from the body of the hide and to enable the hides to take up fresh liquor.

The patentee uses "sponges or liquor holders and injectors," and "drainers or absorbers." The liquor holders consist of "one or more layers of flannel of open texture or other similar material." When more than one layer is used the threads of one layer should run parallel to those of the other, "so that the liquid retained between them [the threads] may be pressed into the hide or skin." The injector is a layer of waterproof fabric or a thin plate of metal which is placed on one side of the liquor holder, so that when the other side is placed against the hide and pressure is applied the liquor may be forced into the hide. For drainers or absorbers the patentee uses six or more layers of coarse hempen bagging, so arranged that the threads of one layer are laid diagonally over those in the next layer. Layers of straw may sometimes be used.

The liquor holders are used in conjunction with the drainers, i.e., hides, &c. are arranged in a heap with a drainer at the bottom; over this drainer is a hide, over the hide a liquor holder and injector, over the injector a liquor holder and hide, over this hide [apparently] a drainer, and so on throughout the heap. This heap is made up in the tanpit, which is then filled with tan liquor. After the hides, &c. have been thoroughly immersed the liquor is withdrawn from the vat, and pressure is applied to the heap. Drainers may also, it is stated, be made of blanketing, stout woollen cloth, or flushing. When these are used (apparently) the heap is made up out of the pit, then immersed in the pit, and afterwards withdrawn and subjected to pressure.

A mode described of applying the drainers, liquor holders, &c. to single, hides, &c. is to use a perforated wooden table travelling on wheels and rails under the roller. A drainer is placed on the table, and the hide is placed on the drainer. The liquor holder and injector may either be wrapped round the roller, or may be placed on the hide as before described and pressed down on to it by the roller.

[Printed, 1867. Drawing. See London Journal (*Newton's*), vol. 10 (continued series), p. 168; Rolls Chapel Reports, 7th Report, p. 180.]

A.D. 1837, November 16.—No 7478.

HERAPATH, WILLIAM, and COX, JAMES FITCHAM.—"Certain improvements or improvements in the process of tanning."

According to the invention described the hides are laced together either by the sides or "butt to butt and shoulder to shoulder" in such a manner as to form an endless band. A large roller is placed just over the tanpit, and the endless band passes over this roller in the same way as an ordinary driving strap passes over a pulley. The lower portions of the endless band hang down in the tanpit, so that the hides are immersed in the liquor. The roller is caused to revolve on its axis by a pinion driven by a drum and strap. Over the roller and touching it is placed a smaller roller, the axis of which is hung on two weighted levers, so that the smaller roller presses down on the larger one. As larger roller revolves the band of hides is pressed between it and the upper roller, so that the partially exhausted liquor is pressed out of the hides, and they descend into the pit ready to absorb a fresh supply of tan liquor. The rollers may, it is stated, be placed wholly or partly under the liquor, and the upper may in some cases be dispensed with, the mere weight of the belt of hides on the roller being sufficient to cause "a considerable expression of the exhausted liquor."

[Printed, 10d. Drawing. See Repertory of Arts, vol. 10 (*new series*), p. 144; London Journal (*Newton's*) vol. 18 (*conjoined series*), p. 39; Mechanics Magazine, vol. 29, pp. 18, 19, and 80.]

A.D. 1838, March 10.—N^o 7589.

SCHROTH, CLAUDE.—(*A communication.*)—"Certain improvements in preparing, pressing, and embossing the surface of leather."

[No Specification enrolled.]

A.D. 1838, May 31.—N^o 7664.

RAPER, NICHOLAS.—"Improvements in rendering fabrics and leather waterproof."

[No Specification enrolled.]

A.D. 1838, June 14.—N^o 7686.

WINTER, JOSEPH.—"Improvements in painting, printing, or otherwise ornamenting the surfaces of leather, silk, cotton, or linen, which improvements are particularly applicable to the manufacture of gloves, stockings, and such like articles."

The invention consists, first, in a method of preparing leather for printing, staining, or painting by steeping and working it in

a solution of Epsom salts, sal ammoniac, alum, and the yolks of eggs, instead of steeping it in the solution of alum, and common salt, and the yolks of eggs, ordinarily used.

Secondly, in a method of preparing coloring matters for "printing or painting upon the surfaces of leather," &c., by grinding the dry colour up in spirits, and then mixing with the colour a small quantity of caoutchouc in a fluid state "by way of gum."

Thirdly, in a method of "extracting portions of the ground colour from painted or stained leather, for the production of devices, patterns," &c. This is to be done by charging "the face of the block, type, or other article by which the pattern is to be given with a material containing acid." The acid, when applied to the leather, partially discharges the stained or painted ground tint on those parts acted on.

Fourthly, in a method "of preserving embossed or raised figures or devices on gloves, shoes," &c., by filling the hollow parts of the devices in the back of the material with caoutchouc, and then covering the back part with a thin non-elastic substance to keep the caoutchouc in its place.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 14 (*continued series*), p. 60.]

A.D. 1838, July 9.—N^o 7725.

SCHROTH, CLAUDE. —(*A communication.*)—"An improved method or methods of making or manufacturing the tools or apparatus employed in the process of pressing or embossing the surface of leather or other substances."

[No Specification enrolled.]

A.D. 1838, July 11.—N^o 7731.

BETHELL, JOHN.—"Improvements for rendering wood, &c. more durable, less pervious to water, or less inflammable." This object is effected by forcing certain solutions into the wood or other material "by pneumatic or hydrostatic pressure." The materials to be worked on are placed in an air and water-tight tank filled with the necessary solution. The air in the tank is then exhausted by means of an air pump, and most articles are sufficiently impregnated with the solution by this means alone. But, *if necessary*, a liquid force pump may be used to force the solution

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into the tank till the requisite pressure is obtained. Leather may also be impregnated by enclosing it in water-proof bags having pipes leading to an elevated cistern from which the solution may be forced into the pores of the leather.

The solutions to be used for making leather durable are,—

1. Boiled or drying linseed oil mixed with oil or spirits of turpentine.

2. Boiled or drying linseed oil or rape oil to which caoutchouc paste is added.

3. Solutions of caoutchouc in spirits of naphtha, turpentine, or any other spirit.

4. Bees-wax dissolved in turpentine,

For rendering the leather less inflammable the solutions are,—

1. Soluble glass dissolved in water.

2. Alum, potash of soda, borax and glue, or starch dissolved in water.

[Printed, 6d. No Drawings. See Repertory of Arts, vol. 18 (*new series*), p. 358; London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 111; Mechanics' Magazine, vol. 31, p. 309.]

A.D. 1839, January 3.—N^o 7922.

RAPER, THOMAS NICHOLAS.—“Improvements in rendering
“fabrics and leather waterproof.”

[No Specification enrolled.]

A.D. 1839, January 11.—N^o 7933.

BREWIN, FRANCIS.—This invention of improvements in using materials employed in tanning, consists in applying mechanical pressure to the materials after they have been used in the common way, but before they have been as much spent or exhausted as is usual. This is effected by compressing them between iron plates in a box or case first by hand pressure and afterwards by an hydraulic ram by means of which the tanning liquor is extracted.

[Printed, 4d. No Drawings.]

A.D. 1839, February 11.—N^o 7964.

SUARCE, CHARLES GABRIEL BARON DE, and PONTIFEX, WILLIAM.—“A new mode of obtaining dyes, colors, tannin,
“and acids from vegetable substances.”

The Sicily shumack or other substance from which the tannin is to be extracted is placed in a cylindrical vessel with a false bottom perforated like a colander. A cover, also perforated in the same manner, is then placed upon the shumack and pressed down by means of a screw. Clean water, raised to a temperature of about 190° Fahrenheit, is then pumped into the chamber below the false bottom, by means of a force pump. The water passes through the shumack into the upper part of the cylindrical vessel, and the tannin and gallic acid are extracted.

[Printed, 6d. Drawing. Repertory of Arts, vol. 18 (*new series*), p. 66; Inventors' Advocate, vol. 3, p. 404.]

A.D. 1839, February 28.—N° 7984.

POOLE, MORRIS.—(*A communication*).—"Improvements in tanning." The invention consists in a method of "tanning by means of pressure of fluids, whereby the liquor is caused to press, first in one direction and then in another." The hides and the bark are placed in a vat made of wood with iron hoops, or of iron. The vat has a cover, which can be screwed on, so that the whole is water-tight. The liquor is admitted into the vat from a supply pipe, which is elevated to a considerable height above the vat, so that the liquor in the pipe presses on the liquor in the vat. There are two pipes leading from the supply pipe into the vat, one leading into the top of the vat, and the other into the bottom. Stop cocks are placed on these pipes, so that the liquor can be caused to enter the vat, either from the top or the bottom, and pressure can be applied in either direction by alternately opening and shutting these cocks. Another method described is, place a cylinder with a plunger working in it on the top of a supply pipe, fed from a vessel elevated above the top of the pipe. The plunger is, by means of a screw or weight, pressed down into the pipe, so that a pressure is produced on the liquor in the vat. The supply pipe divides into two branches, so as to feed the vat either from the top or the bottom.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 12 (*new series*), p. 181; London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 64; Inventor's Advocate, vol. 1, p. 81.]

A.D. 1839, June 26.—N° 8132.

SCHROTH, CLAUDE.—"Certain improvements in the process, manner, or method of embossing or producing raised figures, designs, or patterns on leather and such like materials, and in

"the manner or means used for effecting the same; also in the making or forming of certain tools or apparatus used therein." The "method of manufacturing embossed leather articles is, in truth, a means of forcing out such leather or skins of animals into all the countersunk interstices of the plate, die, or block." The skin is beaten in water and without being pressed or rung is worked and rolled in the workman's hands, "so as to increase its thickness at the expense of its width and length." It is then placed in the mould and gradually worked into the interstices by hand, after which papier maché is forced into the deepest cavities, and the mould is placed on a chafing dish to dry. If preferred a frame can be fitted over the mould and filled with sawdust or other suitable material. Pressure being applied to the sawdust, it is forced in all the interstices of the die. The metals preferred for the plates, blocks, or dies, are "lead and antimony in about the same proportions as used for typography, or fusible alloy of bismuth, lead, and tin (as that commonly known as Darcet's alloy)."

[Printed, *4d.* No Drawings. See Repertory of Arts, vol. 18 (*new series*), p. 34; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 122; Inventors' Advocate, vol. 2, p. 35.]

A.D. 1839, July 20.—N° 8158.

RAPER, THOMAS NICHOLAS.—"Improvements in rendering fabrics and leather waterproof." The object of this invention is to produce by the employment of suitable salts an insoluble compound in the leather, &c. operated on. The method recommended is to immerse the fabric in the following solutions in order:—

1. Gelatine with carbonate of ammonia or pure liquid ammonia in hot water.
2. A concentrated solution of sulphate of soda or of potash or of ammonia, or of phosphate of soda.
3. A concentrated solution of acetate of lead.
4. Fuller's earth and camphor mixed in distilled water.

[Printed, *4d.* No Drawings. See Inventors' Advocate, vol. 2, p. 133; Repertory of Arts, vol. 14 (*new series*), p. 51; London Journal (*Newton's*), vol. 15 (*conjoined series*), p. 444.]

A.D. 1839, August 10.—N° 8191.

VARICAS, ROBERT.—"Improvements in rendering fabrics and leather waterproof."

[No Specification enrolled.]

A.D. 1839, December 4.—N° 8296.

CRONIER, PIERRE NARCISSE.—(*Partly a communication.*)—
“Improvements in filters, and in the means of cleansing the
“same, and for separating, coloring, and tanning matters by
“filtration, or for improvements in tanning, or employing tanning
“matters by filtration.”

The invention consists in placing within a properly constructed vessel a series of filters placed one above the other, each section having layers of sand and stone as the filtering medium through which the water, &c. passes to be filtered.

The mode of tanning by filtration is as follows:—The two upper sections in the vessel are removed, and the skins placed on a wicker frame and put into the vessel, care being taken that the skins do not touch one another. The vessel is hermetically sealed, and the tanning matter supplied to it from a reservoir through cocks at the upper and lower parts of the vessel. The tanning matter is forced into the skins by the upward and downward pressure, and when exhausted is drawn off through a discharge cock. The temperature of the tanning matter may be kept up by suitable means in its passage from the reservoir to the vessel.

[Printed, 6d. Drawings. See *Inventors' Advocate*, vol. 2, p. 371.]

A.D. 1839, December 5.—N° 8301.

HALL, JOHN HEATON.—“Improvements in preserving and
“rendering woollen and other fabrics and leather waterproof.”
These are effected by the following chemical combinations:—
Alum dissolved in water, with or without acetic acid added to it,
is put with a solution of white lead in water, the precipitate
allowed to subside, and the material to be made waterproof passed
through the supernatant fluid; after which it is passed through a
mixture of quicklime and water. The waterproofing material is
then fixed in the leather by a solution of Irish moss. A preservative solution may be made with camphor, crude arsenic, white soap, salt of tartar, and prepared chalk. This may be mixed with waterproofing solutions.

[Printed, 4d. No Drawings. See *Repertory of Arts*, vol. 14 (*new series*) p. 239; *London Journal (Newton's)*, vol. 18 (*conjoined series*), p. 239; *Inventors' Advocate*, vol. 2, p. 372.]

A.D. 1840, March 7.—N° 8419.

MALTBY, WILLIAM, junior, and CUERTON, RICHARD, junior.—"Improvements in extracting and concentrating the color, tannin, and other matters contained in animal and vegetable substances." This invention consists principally in causing water to flow over from a boiler or vessel on to the substance under operation, and return again into the boiler "to be again and again raised therefrom and caused to flow over fresh quantities of the substance from which the extract is to be obtained." The substance from which the tannin or other matter is to be extracted is placed in a covered tank, with a perforated false bottom above the level of the boiler. The boiler is set in a water bath. From its centre runs up a pipe, at the top of which is a copper receiver fixed on a tube sliding within the pipe, and working in a stuffing box, so as to allow a pipe leading off from the receiver to be raised and lowered. This pipe runs into the top of the covered tank, and from the bottom of the covered tank below the false bottom is a pipe running into the boiler. When heat is communicated to the water in the boiler the pressure of the steam will force the hot water through the pipes on to the substance in the covered tank; and the lower pipe being then opened, and the steam in the boiler condensed, the water will return into the boiler, and the process may be repeated as often as necessary. If preferred, the water may be pumped up on to the substances in the covered tank. If the liquor after exhausting the coloring or other matter in the substance is not of sufficient strength, it is drawn off into vats. The color or tannin is precipitated by chemical means, and the liquor drawn off. "We have then the colouring matter and tannin reduced to a thick paste."

[Printed, 10d. Drawings. See Repertory of Arts, vol. 15 (*new series*), p. 12; Inventors' Advocate, vol. 3, p. 180.]

A.D. 1840, March 16.—N° 8429.

VARICAS, ROBERT.—"Improvements in rendering fabrics and leather waterproof."

[No Specification enrolled.]

A.D. 1840, March 19.—N^o 8437.

BURNETT, SIR WILLIAM.—“Improvements in preserving animal, woollen, and other fibrous substances from decay.” This invention consists in submitting the substances to be preserved to the action of chloride of zinc. A tank is filled two thirds full of chloride of zinc dissolved in cold water, in the proportion of one pound of chloride of zinc to five gallons of water. In ten or twelve hours the solution is ready. The materials are then completely immersed in it from forty-eight to ninety-six hours, and are then dried under cover. Though no mention is made of leather, the terms of the specification would seem to include it.

[Printed, *4d.* No Drawings. See London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 356; *Mechanics' Magazine*, vol. 33, p. 307; *Inventors' Advocate*, vol. 8, p. 227.]

A.D. 1840, March 23.—N^o 8441.

KEENE, CHARLES.—“Improvements in producing surfaces on leather and fabrics.” The object of this “invention is to produce on leather a surface that shall be waterproof, or partly waterproof, according to the substance thereof, or thickness of the material applied thereto, having all the elasticity and more pliancy than leather heretofore in use, which shall not be liable to chip or crack, and will be considerably strengthened by the application.” Indian rubber is decomposed in turpentine, or any known solvent, and passed through cushioning rollers till it attains the consistency of dough or putty. It is then applied to the leather. Two rollers, lying horizontally or on an inclined plane under an angle of forty-five, are adjusted to receive the skins. One of the rollers is provided with a damper, keeping it continually wetted, which prevents the indian rubber pulp adhering to it. The skin is placed over the dry roller, and a long roll of the indian rubber pulp pressed between the wet roller and the skin. The rollers are then turned and the skin passes through them receiving a thin coating of waterproof material. It may be finished with shellac dissolved in spirits of wine and a little Venice turpentine.

[Printed, *4d.* No Drawings. See Repository of Arts, vol. 14 (*new series*), p. 233; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 357; *Mechanics' Magazine*, vol. 33, p. 307; *Inventors' Advocate*, vol. 8, p. 228.]

A.D. 1840, April 16.—N° 8478.

WEBSTER, WILLIAM HENRY BAILEY.—“Improvements in
“preparing skins and other animal matters for the purposes of
“tanning and the manufacture of gelatine.”

[No Specification enrolled.]

A.D. 1840, November 25.—N° 8718.

WEBSTER, WILLIAM HENRY BAILEY.—“Improvements in
“preparing skins and other animals matters for the purpose of
“tanning, and in the manufacture of gelatine.”

[No Specification enrolled.]

A.D. 1841, February 22.—N° 8857.

POOLE, MOSES.—(*A communication.*)—Improvements in tanning and dressing or currying of skins. The invention is “for the
“employment of machinery” “for the purpose of removing the
“hair from the skins without the aid of acid or alkalies, and
“for softening the skins in order to render them more suitable
“to receive the tanning matter, and for the arrangement of
“machinery for cutting or paring the skins,” so as to obtain a
uniform thickness, and also “an arrangement of machinery for
“currying and dressing skins.”

The skins are first soaked for about forty-eight hours, then placed in what the patentee terms a fulling machine, and subjected to “action rammers” for about an hour. By the blows of the rammers the skins are “softened and brought into a fit state to
“have the hair removed.” The skins are then submitted for some time to the action of another apparatus, consisting of a vessel (by preference closed) fitted with pipes for the introduction of steam, hot and cold water, and tanning matters, and containing a horizontal revolving shaft with radial arms, to the action of which they are submitted.

“Steam is admitted into this vessel to raise the temperature
“about to 40° or 45° degrees of Fahrenheit. The skins are then
“removed into another vessel, which may be of wood, or any
“other suitable material, where they are subject to the action of
“lukewarm water in running through them for the space of
“about twenty-four hours.” The patentee states that he uses

lime water in the place of lime milk which is ordinarily used, for soaking the skins.

After the operations above described, the hair may, it is stated, be removed from skins with the greatest facility. They are then subjected to the action of cutting and paring by a machine, in which the skin passes between two horizontal revolving cylinders, one above the other, being pressed against the upper cylinder by a blade without a cutting edge. The skin passes over the upper cylinder [apparently], and is acted on by a cutting blade, placed parallel to the surface of the upper cylinder, which removes all parts of flesh that adhere to the skin, and fits it for the future operations which it has to undergo. The skins thus prepared are placed in the fulling apparatus, and worked in lukewarm water for some time, and are then placed in the vessel containing the horizontal shaft with radial arms, where they are saturated with weak tanning matter, after which they are removed, piled up, and are next placed in stronger tanning matter. They are removed three times afterwards, once every day, and fulled every forty-eight hours.

Another method of operating on the skins is to place them in the vessel containing the horizontal shaft with radial arms, by the rotatory movement whereof "the skins are thrown against the sides and fall to the bottom and are again raised; this action is continued for some time, until the skins have lost some portion of their hair." They are then placed in a cylindrical vessel fixed on a horizontal axis, to which motion is communicated by any suitable power. "This vessel has a series of pegs or pins fixed therein, and it is placed in water as far up as the half of these pegs. The skins, which project over these pegs, have their hair removed by the rotary motion of the vessel." The patentee further describes a method of currying or dressing skins by plastering them over with fatty matter, and then placing them in a cylinder with pegs on the inner surface, which cylinder being caused to revolve, makes the fatty matter penetrate the skins, which are subsequently dried and further prepared in the ordinary way.

Another part of the invention consists in cutting skins to any desired size or shape, by the use of a strong plate of the required form, having round it a "cutting blade of steel."

The patentee also describes a nipper for holding skins down while the inequalities are being planed off by hand with a small cutter. The nipper is pressed down by a weighted lever.

A simple form of press for pressing skins in which the upper plate is raised and lowered by a pair of vertical screws, is shown in the drawing attached to the Specification.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 16 (*new series*), p. 287; Mechanics' Magazine, vol. 35, p. 208; Inventors' Advocate, vol. 5, p. 133.]

A.D. 1841, February 23.—N^o 8858.

DEAN, JOHN.—“Improvements in preparing skins and other animal substances for obtaining gelatine, size, and glue; and in preparing skins for tanning.” “I take all such hides and skins, or pieces of hide or skins, or other animal substances, as the tendons of the feet, as are usually employed in the manufacture of gelatine, size, or glue, and, if not already done, I deprive them of their horns, hoofs, bony, or fatty matters or parts, and if the hides, skins, or pieces, which I may intend to use have not been deprived of hair, I place them in a solution of lime, or of the alkalies potass or soda, or combined proportions of either, diffused in water in the proportion of eight to twenty-six pounds of lime, and from four to sixteen pounds of potass or soda to every fifty gallons of water.” In this the skins remain not less than twenty-four hours, when the hair will be slightly loosened. They are then placed with some of the solution in a cylinder revolving in a trough, case, or vat, by the action of which the hair is removed. The hides are then cleansed, fleshed, or shaved. The hides thus prepared, or the animal substances, such as tendons, which do not require unhairing are steeped in water, until a slight putrescence is evident. They are then placed in receivers, covered with water, and upon them is poured from six to twenty-eight or thirty pounds of hydrochloric acid to every hundred pounds of animal substance; or the hydrochloric acid may be mixed with water and poured upon the skins and animal substances, and stirred round. The hides, &c. are next washed and then placed in a constantly flowing current of clear fresh water, where they remain one, two, or three days, after which they are ready to have their gelatine, size, or glue extracted from them.

Hides and skins intended to be tanned must, for the purpose of being deprived of their hair, be submitted to similar processes to those above described with the rotating cylinder, and with *hydrochloric acid*, after which they are ready to be manufactured into leather.

An effect similar to that produced by the application of hydrochloric acid may be produced by the exposure of hides, skins, &c., in a close vessel to the action of hydrochloric acid gas generated by the usual method; "or the same gas may be disengaged and afterwards absorbed by water, and the animal substance may then be exposed to its action."

[Printed, *nd* Drawing. See London Journal (*Newton's*), vol. 80 (*unpublished series*), p. 369; *Mechanics' Magazine*, vol. 80, p. 422; *Inventors' Advocate*, vol. 8, p. 149.]

A.D. 1841, March 16. N° 8990.

WARINGTON, ROBERT. "Improvements in the operation of tanning." The improvements are described by the patentee as, "applicable to all kinds of hides and skins whether dry, salted, or fresh," and as stated and claimed are:—"The use of carbonates of soda or potash dissolved in water" for soaking the hides or skins so as to enable the hair being readily removed."

"The employment of baryta, potash, soda, muriatic acid, nitric acid, oxalic acid, and any other acid (except the sulphuric) as also vegetable matters, as ordinary rhubarb, sorrel, apples, &c., for the purpose of facilitating the removal of the hair, [hair] and at the same time swelling the hide or skin, or for swelling them only."

"The use of the carbonates of ammonia as a grainier, for the purpose of graining hides or skins,

"The employment of vegetable matters [brained] and chemical agents capable of retarding oxidation," such as "ordinary rhubarb, brained potatoes, &c.," and "gum, starch, certain compounds of sulphur, &c.," "such matters or agents to be used with the tanning agent employed."

"The use of bichromate of potash in solution, or diluted sulphuric acid," in which the skins or other animal substances are to be immersed for the purpose of preserving them.

[Printed, *nd* No Drawings. See Repository of Arts, vol. 18 (*unpublished series*), p. 40; London Journal (*Newton's*), vol. 81 (*unpublished series*), p. 363; *Mechanics' Magazine*, vol. 81, p. 328; *Inventors' Advocate*, vol. 9, p. 109.]

A.D. 1841, March 29. N° 8997.

FURNIVAL, JAMES. "An expeditious mode of unhairing, mastering, and tanning various descriptions of hides and skins." For unhairing and mastering the skins are placed in

a cylindrical vessel (consisting of an open framework or having a grating at the side) which revolves in a pit containing the unhairing liquor. The vessel has longitudinal beams on the inside so placed as to cause an uneven motion to the liquors contained in the vessel, and about two-thirds of the vessel should be under the unhairing liquor.

For tanning the patentee (apparently) uses similar vessels, with or without apertures, revolving in the tanning liquor or containing it, and arranges the apparatus in sets, moving the liquor from one to the other in the same way "as the packs are now moved in the handlers, namely, running off the weakest liquor from the youngest pack to be removed and moving the other liquors from one to the other so as to make room for a fresh strong liquor to the oldest pack." The vessels may be arranged either one over another, or otherwise with communication between them so that the liquor may pass from one to another.

The patentee states that in tanning with extracts it would be well not to use liquors heavier than "thirty" by Ronchellis tano-meter, and not to allow the liquors to remain without renewing when they become lighter than "eight," and also that in tanning with extracts he uses purified acetic acid obtained from the destruction distillation of wood as an assistant to the combination. The supply of this acid must be diminished or discontinued should the liquors become very acid, and it is stated to be "dangerous to use the acid if the strength of the liquors be not kept up."

[Printed, 4d. Woodcut. London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 448; *Mechanics' Magazine*, vol. 35, p. 92; *Inventors' Advocate*, vol. 5, p. 51.]

A.D. 1841, June 10.—N° 8980.

FANSHAWE, HENRY RICHARDSON, the younger.—"Improve-ments in curing hides and skins, and in tanning and washing and cleaning hides, skins, and other matters." The invention consists of submitting the hides which are being tanned to intermittent pressure so that the liquor of which the tannin has been absorbed may be pressed out of the hides, and that they may absorb fresh quantities of tanning liquor. Four methods are described:—By the first plungers are placed either over or under the hides in the tan pit. These plungers are worked slowly up and down so as alternately to press the hides together and to

separate them. When the plunger is over the hides a rope attached to the plunger may be passed through their corners with knots or washers to separate them so that the lifting of the plunger will cause the hides to be lifted and separated after the pressure.

According to the second method the hides or skins are placed in a circular tan pit, and are pressed upon by two rollers, which travel round the pit, rotating on screw axes carried by arms projecting downwards from a large horizontal wheel, which turns on an upright shaft in the middle of the pit. On each of the axes is a double screw passing through a reverse spiral screw or groove in the centre of the roller, so that as the roller is carried round and caused to rotate, it passes to and fro along its axis, thus subjecting to pressure at various times every portion of the hides placed on the tan pit.

By the third method the hides are fastened inside a large cylinder revolving partly or wholly in tanning liquor. Inside this great cylinder is another cylinder which presses against the hides during a portion of the revolution of the great cylinder and leaves them free during the remaining portion of the revolution. By another method the hides may be placed outside the great cylinder and pressed by an endless pressing band going round outside the cylinder, and passing over a drum above, or by a pressing roller.

[Printed, 1s. 8d. Drawings. See *Mechanics' Magazine*, vol. 85, p. 402.]

A.D. 1841, September 8.—N° 9079.

DE SCHELESTADT, EDWARD LOOS, and STERLINGUE, ETIENNE.—“Certain new or improved machinery or apparatus “ and process for tanning skins or hides and preparing or operating upon vegetable and other substances.”

[No Specification enrolled.]

A.D. 1841, December 2.—N° 9164.

WILSON, ROBERT.—“Improvements in the manufacture of “ leather.” The invention is thus described by the patentee. “ My invention consists, first, in a new mode of preparing hides “ or skins ” “ for covering rollers used in the manufacture of yarn “ and thread.” “ After the hides or skins have passed through

“ the common and well-known process of immersion and working
 “ in a lixivium of pigeons dung, I pass them through a solution
 “ of alum, terra japonica, and quercitron bark, in which solution
 “ I allow them to remain about four days, frequently handling
 “ them, and stirring up such solution during that period,” after
 which the hides are ready to be dried, &c.

“ Second, in a new mode of splitting hides and skins ” to be
 used for covering rollers or to be made into leather. “ After the
 “ hide has passed through the usual processes up to the im-
 “ mersion in bark liquor and after having been immersed in bark
 “ liquor for the space of four days and frequently handled during
 “ that period, I take it out of the bark liquor and fasten one end
 “ of it to a cylinder and then cause the cylinder to revolve so as to
 “ bring that part of the cylinder to which the hide is attached
 “ immediately opposite to a fixed bar. I then take the opposite
 “ or loose end of the hide and pass and draw it over such bar until
 “ a sufficient part of the hide has been so drawn over as to make
 “ that part of the hide which will remain between the cylinder
 “ and the bar quite tight and drawn out to a firm tension. I
 “ then place two rollers upon the surface of the hide upon the
 “ fixed bar, so as to keep the hide upon the bar and between it
 “ and the cylinder straight and tight as it is drawn over the bar.
 “ I then screw up a knife to as near the surface of the bar as I
 “ may deem requisite to split the hide into two parts according
 “ to the thickness of each part required. I then cause the cylinder
 “ to revolve so as to draw the hide downwards over the bar, and
 “ the knife having an eccentric motion given to it cuts or splits
 “ the hides into two portions throughout the entire length.”

[Printed, 6d. Drawings. See *Mechanics' Magazine*, vol. 36, p. 478.]

A.D. 1841, December 21.—N° 9199.

COX, JOHN.—“ Certain improved processes of tanning.”

The patentee describes six methods :—

The first consists of making the skin or hide into a bag, leaving
 an aperture, by which tanning liquor is introduced into the bag
 by a tube from a vessel a slight height above the bag, which rests
 on a floor of wood or other suitable surface. The pressure of the
 liquor accelerates the percolation through the hides, &c., by which
means tanning is speedily effected.

By the second method the bags of hides, &c., are placed in narrow partitions, with smooth sides, and are filled from a vessel slightly higher above them than used for the first process.

By the third method the bags of hide, &c., are suspended by cords and filled with tanning liquor.

By the fourth method the bag of hide, &c., filled as before from a cistern is immersed in tanning liquor in a pit.

By the fifth method the hides or skins are fastened together in endless belts, and by means of reels fixed over the tanning pits caused to circulate or move in the tan pits, which are of greater depth than those commonly in use.

By the sixth method the hides are placed in the compartments of a bleachers' "wash" or "dash" wheel revolving "into or above" a cistern containing tan liquor.

There are holes in the circumference or sides of the wheel, through which tan liquor is thrown by a pump on to the hides, as the wheel revolves.

The patentee likewise claims the use of the wash or dash wheel for "cleansing, working, and softening hides or skins previous to being dressed into leather, and also for cleansing and scouring tanned dressing leather, so as to save manual labour and render the leather soft and pliant."

[Printed, 6d. No Drawings. See Repertory of Arts, vol. 8 (*enlarged series*), p. 253.]

A.D. 1842, January 13.—N^o 9219.

BORDIER, JULIUS.—(*A communication.*)—"Certain improvements in preparing skins and hides, and in converting them into leather." The invention consists in tanning the skins and hides "by submitting them to the action of such metallic saline and earthy substances as may be decomposed by the said skins and hides, or may combine with the same. Among these substances the one that seems preferable is the bibasic sulphate of sesquioxide of iron, or the basic red sulphate of iron, or the sub sulphate of peroxide of iron." The basic red sulphate is prepared from pounded copperas dissolved in water, and treated with sulphuric acid and peroxide of manganese, or from the copperas treated with sulphuric acid, nitric acid, and hydrate of peroxide of iron. The bibasic red sulphate may be prepared from a precipitate left in preparing the liquor by the first-mentioned

process. Skins and hides may be much more quickly tanned by this process than by the ordinary one; the leather produced is more durable, and when worn out may be easily freed from the basic salts and fatty matters which render it imputrescible and impermeable, and may be then used for making glue.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 382.]

A.D. 1842, August 18.—N° 9448.

NEWBERRY, GEORGE JOHN.—“Certain improvements in producing damask and other surfaces on leather and other fibrous substances.” The invention for producing a damask surface is as follows:—A mould is made of gelatine alone, or strengthened with muslin, of the damasked surface to be copied. To the face of the mould is then applied a thin coat of oil or spirit varnish. When this is dry such colours as are required are painted on it, and coated over with “Flocker’s varnish” or other adhesive matter, and while this remains sticky a lair of leather is pressed down on it till it adheres. When the adhesive matter has dried, the gelatine is dissolved and washed from the surface. If the mould is made of wood, metal, or other material, the face is coated thinly with gelatine, and the process is the same as that before described. By similar means an imitation of morocco grain, embossed gold and printed surfaces and coloured imitations of flowers, &c., may be produced, and the effect of pictures copied. When the leather has to be embossed in high or low relief, hydraulic pressure may be applied as follows:—The mould is placed on the bottom of a cylinder to which it is exactly fitted. The bottom of the cylinder is formed of a pierced plate. The leather, well wetted, is put on the mould, and further up the cylinder is placed “a strong sheet of india-rubber forming a sort of drum head, and covering the entire area of the circle,” this is cemented to the interior of the cylinder by a solution of caoutchouc “so as to line the sides of the cylinder five or six inches above the drum-head.” The part of the cylinder above the drum-head is filled with water, and, being connected with an hydraulic press, the drum-head is driven down upon the mould and the leather forced into the shape of the pattern.

The same effect may be produced by employing a vacuum. The *mould made of some porous substance* is placed on the perforated

top of an air-tight vessel, and secured at the edges with cement. The leather, being wetted, is placed over it, and covered if necessary with a sheet of caoutchouc. The air is exhausted in the vessel, and the leather by this means forced down into the hollows of the mould.

A perforated surface is obtained by stretching the leather and placing it over a pinned and coppered block. The leather is then worn into the holes of the design by friction. Impressions of the transverse cuttings of wood may also be obtained by rubbing ink into the natural grain and printing it off.

A marbled surface is produced by sprinkling liquid oil colours mixed with varnish and soap thinned with spirits on the surface of a sheet of water. The leather, &c., is then carefully laid on them. Outlines of tin may be used to keep the colours separate.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 23 (*continued series*), p. 95.]

A.D. 1842, October 8.—N° 9487.

DEUTSCHE, CLAUDE EDWARD.—(*A communication*).—"Improvements in combining materials to be used for cementing purposes, and for preventing the passage of fluids, and also for forming or constructing articles from such compositions or materials." This invention consists in a mode of treating bituminous substances and combining them with other matters, so as to produce cements applicable to leather, and preparations to make the same impermeable to wet. All the essential oil and water contained in the bituminous substance (bitumen of Trinidad being preferred) is driven off by heat. The substance is then passed through a metallic sieve, and is reduced to a temperature of 50 degrees. This, when used in combination with caoutchouc and oil or alcohol will make leather impermeable. Or if used in combination with bedellium copal, rosin lac, other rosin, or similar vegetable products, together with a suitable quantity of oil or alcohol, or the two mixed, it makes a good cement.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 3 (*enlarged series*), p. 299.]

A.D. 1843, May 25.—N° 9739.

NISBETT, JOHN.—"Improvements in preparing hides and skins in the manufacture of certain descriptions of leather."

AK.

The invention consists of a contrivance for "grounding," i.e., scraping, and rubbing losh and other leather by machinery. A series of arms, with knives at their extremities, are fixed to an axis and caused to revolve rapidly. The skin is put upon a bed of hay or other suitable material, and is passed on a carriage under the revolving knives, by which it is scraped. The workman retards the progress of the skin when necessary, so as to cause it to be properly scraped. In operating on sheep and deer skins, and in reducing the thickness of others, the knives have pieces of wood placed by their edges so as to form circular bosses.

Rubbing skins is effected in a similar way. Circular rubbers of pumice stone or other suitable material are fixed to an axis, and caused to revolve rapidly, the skin being passed underneath them.

[Printed, 1s. 8d. Drawings. See Repertory of Arts, vol. 3 (*conjoined series*), p. 99.]

A.D. 1843, November 2.—N° 9923.

WELCH, FREDERIC ISAAC.—"A certain improvement or certain "improvements in the manufactures of leather." The invention consists in a contrivance for graining patent or enamelled leather. For this purpose the skin to be grained is laid on a plate, "the surface of which is engraved with fine parallel equidistant lines," "the surface to be grained (i.e. the enamelled surface) being placed "in contact with the said plate." A sheet of flannel or cloth is placed over the skin, and the plate with the skin laid upon it is introduced between two revolving revolvers, and carried forward by their rotation, so as to engrave the lines on the skin. The action of the rollers may be reversed, so that the skin may be passed either in one direction or in the other, and, by altering the position of the skin so that one set of lines is engraved at an angle to another set of lines, the desired grain is produced.

[Printed, 8d. Drawing. See Mechanics' Magazine, vol. 40, p. 350.]

A.D. 1843, November 21.—N° 9952.

HANCOCK, THOMAS.—"An improvement or improvements in "the preparation or manufacture of caoutchouc in combination "with other substances, which preparation or manufacture is "*suitable for rendering leather, cloth, and other fabrics water-*

"proof, and to various other purposes for which caoutchouc is employed."

The first part of this invention relates to the "combination of caoutchouc with silicate of magnesia, whereby manufactured caoutchouc is rendered free from that clammy and adhesive character which it usually possesses." The silicate of magnesia (sometimes called Venetian or French chalk and talc) is reduced to a fine powder and rolled with the caoutchouc until the whole is well mixed. The mass is then worked into a uniform consistence in the machine patented by the same Thomas Hancock on April 18th, 1837. If required to be spread on cloth a small quantity of solvent is applied to it in the manner there explained. If very thin sheets of caoutchouc are required the process may be the same as that under the patent of the same Thomas Hancock of January 23rd 1838. When a dark colour is required asphalté may be employed instead of or in combination with the silicate. The invention also relates to the combination of sulphur with caoutchouc for obviating the effects of changes of temperature on the caoutchouc. The combination is effected either by mechanical means as with the silicate of magnesia, or by means of a solvent, in which case oil of turpentine is preferred. In the latter case, the solvent is saturated with as much sulphur as will after evaporation leave the required amount to blend with the caoutchouc. But the method preferred is to melt in an iron vessel a quantity "of sulphur at a temperature ranging from about 240° to 250° Fahrenheit, and immerse in it the caoutchouc previously rolled in rough sheets or cut to any convenient form or size and allow it to remain until the sulphur has penetrated quite through the caoutchouc." So far it is to be observed "that the combination is still as soluble as before," and has not yet undergone the change contemplated in this part of the invention. After the caoutchouc is immersed in the sulphur the temperature must be greatly raised, and by the effect of this a change in the properties of the caoutchouc will be effected, its elastic force will be insured, and it will be more able to resist the influences of heat and cold. When this combination is spread upon cloth or other material capable of bearing the necessary temperature, the articles are passed over plates or cylinders heated sufficiently to effect the change, and in the case of leather and other substances which will not bear great heat the surface coated with the caoutchouc is brought in contact with the heated plate, and the amount of heat applied is less.

N.B.—By a Memorandum of Alteration enrolled on the 14th day of October 1845, after the words “the composition is still as soluble as before,” are added the words “except when I use a solvent that has been saturated at a high temperature, as in the case of oil of turpentine.”

Printed, 4d. No Drawings. See Repertory of Arts, vol. 5 (*enlarged series*), p. 154, and vol. 30 (*enlarged series*), p. 139; London Journal (*Newton's*), vol. 26 (*conjoined series*), p. 178, and vol. 39 (*conjoined series*), p. 159; Mechanics' Magazine, vol. 56, p. 456 and 491, vol. 61, p. 37; vol. 62, p. 540, and vol. 63, p. 56; Exchequer Reports, vol. 2, p. 388; Law Journal (*Exchequer*), vol. 23 (*new series*), p. 110; Patent Journal, vol. 11, p. 133; De Gex, Macnaughten, and Gordon's Reports, vol. 3, p. 332; Law Times, vol. 20, p. 102, and vol. 25, p. 595; Patentes' Manual, pp. 36, 42, and 100; Journal of Gas Lighting, vol. 2, p. 127.

A.D. 1844, January 11.—N° 10,006.

WRIGHT, WILLIAM.—“Certain improvements in rendering leather skins or hides impervious to wet, more flexible and more durable.” This invention consists in the use of one or more of the following compositions to make hides and skins waterproof:—

1. Fat, from which all moisture has been extracted, and bees wax, are mixed with boiled linseed, rape, or neat's foot oil. Caoutchouc dissolved in rectified oil of turpentine, and burgundy pitch similarly dissolved are then added.

2. For this the same preparation of fat, bees-wax, and oil is used, and a solution of yellow rosin in oil of turpentine is added to it.

3. Caoutchouc dissolved by heat in purified cod or spermaceti whale oil.

4. Caoutchouc dissolved in oil of turpentine mixed with purified cod, or spermaceti whale oil and fresh bees-wax.

The compositions Nos. 1 and 2 are used with the thicker, and 3 and 4 with the thinner hides and skins. The thick hides, &c., are placed in a tank or other vessel communicating with a boiler or melter in which the composition is prepared. The composition is heated to about 120° Fahrenheit, and the hides are submerged in it for two or three hours. Hydraulic pressure or a vacuum may be used if necessary. Nos. 3 and 4 are applied with a brush, and manufactured articles may be exposed in a heated room before being saturated.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 4 (*enlarged series*), p. 101; Mechanics' Magazine, vol. 41, pp. 189 and 200.]

A.D. 1844, February 8.—N^o 10,042.

COX, JOHN, and COX, GEORGE.—“Improvements in the manufacture of leather and gelatine.” The improvements in the manufacture of leather relate to sole leather, requiring to be “struck,” “pinned,” or “rolled.” For rolling the patentees use a roller attached to the end of an arm, which swings backwards and forwards, the roller travelling on a concave bed shaped as the arc of a circle. The load which causes the roller to press upon the leather is placed on a frame over the arm, with freedom of motion vertically. The leather being placed on the bed, the thickness of the leather slightly elevates the roller and arm, causing them to lift up the load above, of which the whole weight therefore presses on the leather. The bed is slightly flattened at each extremity so that the roller leaves the leather at the end of each swing, when the leather can be shifted.

For working and striking leather, the patentees use two cylinders or rollers one above the other. On the upper is fixed a blunt spiral knife commencing at the centre of the roller, and making one turn round the roller on each side of the centre. The hide is fastened round the lower roller, and the rollers being caused to revolve, the hide is rubbed and smoothed, cleansed from hair, flesh, &c., by the spiral knife.

For producing gelatine, the patentees prefer to use the shoulders and cheeks of ox hides, but other parts may be used. The hide and skin pieces are cleansed in water, cut in small pieces by a machine, and reduced to pulp in a pulp mill, similar to a papermakers pulp mill. The pulp is pressed between rollers, mixed with water, and then subjected to heat varying from 150° to the boiling point. By this process gelatine is produced. When very pure gelatine is required, liquid gelatine is mixed with a small quantity of ox blood at a temperature not exceeding 160° or 170°, and then heated. The albumen of the blood becomes coagulated, and rises as a scum. The heat is then withdrawn, after which the scum is removed, the purer liquor allowed to settle and afterwards run into coolers to congeal and dry. The patentees evaporate the gelatine *in vacuo*, in order to avoid the injury caused to gelatine by long subjection to heat. The gelatine may also be evaporated on a surface heated by steam.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 5 (enlarged series), p. 217.]

A.D. 1844, February 26.—N° 10,081.

LARBALESTIER, ISABELLA.—"Improvements in making certain skins resemble the sable fur." This invention consists in applying to the surface of certain skins of animals known by the name of "hampaster," which are found in the neighbourhood of Leipsic, a certain colouring composition. A "killing" of slacked lime is first lightly brushed on to the hair, and after twelve hours beaten off. A colouring composition made of three lbs. roasted gall nuts, four ozs. sal-ammonia, fourteen ozs. sumack, twelve ozs. black antimony, two ozs. verdigris, ten ozs. lettirsedge, four ozs. copper dust, and ten ozs. argile, reduced to a powder and mixed with nine gallons of water is then applied with a brush. After twenty-four hours the skins are beaten, and the process repeated till the requisite colour is obtained.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 4 (*enlarged series*), p. 106; Mechanics' Magazine, vol. 41, p. 127; Engineers' and Architects' Journal, vol. 7, p. 323.]

A.D. 1844, March 6.—N° 10,092.

FORSTER, THOMAS.—"Improvements in preparing compositions of india-rubber and other matters for forming articles therefrom, and for the coating of surfaces of leather and woven and other fabrics." The invention has for its object the "applying or spreading a combination of india-rubber with shell-lac or other gum, or resins, or bitumens, not soluble in water, and with arseniate of potash or other mineral preservative of vegetable matter on one or more surfaces of leather to render the same waterproof," and also grinding and mixing the said materials in a machine consisting of two angularly grooved rollers, the angular projections of one working in the angular projections of the other, one of the rollers being driven by steam or other power. The two rollers are placed in a pan, which is heated externally by steam.

[Printed, 8d. Drawings. Repertory of Arts, vol. 5 (*enlarged series*), p. 288; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 188.]

A.D. 1844, March 28.—N° 10,126.

DAVISON, ROBERT, and SYMINGTON, WILLIAM.—"A method of drying, seasoning, and hardening wood and other articles, parts of which are applicable to the desiccation of vegetable substances generally." The invention consists in the applica-

tion of rapid currents of heated air to effect the drying, seasoning, and hardening of wood, &c., which is placed in close chambers built of fire-brick. "The great object in all cases should be to bring the heated air as speedily as possible into contact with the wood to be dried, seasoned, and hardened, and to allow it after it has done its office to pass away as speedily." Leather is mentioned, but no particular process described for its desiccation.

[Printed, 1s. Drawings. See *Engineers' and Architects' Journal*, vol. 7, p. 488.]

A.D. 1844, July 3.—N^o 10,242.

NONMETER, CHARLES. "Improvements in tanning hides and skins." The invention consists, first, in the use of frames on which the hides rest, or to which they are attached. These frames fit into the tan pit with a small interval between each of them, so that the tanning liquor in the tan pit acts more freely on each hide than it does on hides piled upon each other, according to the ordinary process.

Second, in a contrivance for pressing the spent liquor from hides and skins. This is effected by "using a suitable press, between the surfaces of which a number of hides or skins are piled, and then pressure is exerted to bring the pressing surfaces" "to approach each other, and thus to express the liquor therefrom." The pressure may be effected by means of a screw press or otherwise.

[Printed, 10s. Drawings. See *Repository of Arts*, vol. 5 (*enlarged series*), p. 146.]

A.D. 1844, September 26.—N^o 10,331.

TURNBULL, ALEXANDER.—"A new mode or method of more expeditiously and effectually tanning hides and skins, and of extracting and separating the catechuic acid from the tannic acid in the catechu or terra japonica used in tanning."

The invention of nine improvements in tanning is claimed by the patentee.

The first consists in extracting the lime with which hides and skins become impregnated during the process of removing the hair. This is effected by placing the hides, &c., in a solution of sugar or other saccharine matter, sawdust, and water, or in a mixture of sawdust and water only. Pyroxylic or wood spirit may also be used for getting rid of the lime.

The second improvement consists in removing the hair from hides, &c., without the use of lime, by steeping them in a solution of sugar or other saccharine matter, the action produced by which "causes the gelatine or true skin to swell or expand, and "without acting upon or causing any injury to the gelatinous "fibre of the hides or skins, loosens the epidermis, and renders "the removal of the hair a matter easily effected."

The third improvement consists in removing the hair from hides, &c., without the use of lime, by steeping them in a solution of muriate or soda or common salt, "which contracts the epidermis without acting upon the gelatine, and thus loosens and "separates it from the true skin, by which means the hair is "easily removed without injuring the gelatinous matter which "forms the basis of the leather."

The fourth improvement consists in separating the catechuic acid and other deleterious material found in *terra japonica* from the tannic acid. For this purpose the catechues is ground into a fine powder, mixed with warm or cold water, and poured in a cold state into a vessel which has a bottom of fine wire gauze, calico, linen, or other porous material. The catechuic acid and other deleterious matters are retained in the vessel by reason of their being insoluble in cold water, and pure tannin is obtained.

The fifth improvement consists in obtaining tannic acid from the refuse left in the tanks by the last described process. This is effected by placing the refuse in stoves or drying pans at a heat of 160° Fahrenheit, and then subjecting it to filtration.

The sixth improvement consists in preventing the formation of gallic and ellagic acid, when oak bark, sumack, *divi divi*, *valonia*, and other materials are used. For this purpose the hide to be tanned is made into a bag, and filled with a tannin liquor made with ground oak bark, or *divi divi*, &c. The bag is then closed and placed in box filled with a tannin liquor made with *terra japonica*. The two liquors are made of different specific gravities, and this causes endosmosis and exosmosis, so that the tannic acid passes rapidly through the hide, which is thus quickly tanned. The liquor made with oak bark, &c. not being exposed to the action of the atmospheric air, gallic acid, &c., are not generated.

The seventh consists in the method of tanning hides by endosmosis and exosmosis as above described.

The eighth consists in tanning hides, &c. in closed pits or tanks, in which a constant agitation and circulation of the tan-

ning liquor is produced by means of a suction pump, having a force pipe and suction pipe in connection with the pits or tanks. These pipes force the liquor into the top and withdraw from the bottom of each tank.

The ninth consists in tanning hides by first removing the lime from them, or by removing the hair without the use of lime, and "using *terra japonica* when purified, or other tanning liquor prepared in the manner before described."

[Printed, *ed.* Drawings. See *Repository of Arts*, vol. 7 (*enlarged series*), p. 107; *London Journal* (*Newton's*), vol. 26 (*conformed series*), p. 264.]

A.D. 1841, October 17. N° 10,353.

GILGUTH, EDWARD.—"Improvements in printing on leather and skins." This invention relates to the use of a solution to make colors printed upon leather unalterable, and proof against acids. The solution, which is used for all colors, is made as follows:—Half a gallon of muriatic acid of 18° by Beaume's hydrometer, and a quarter of a gallon of aqua fortis 36° of Beaume, are put in a flat bottle with a long neck, called a "matras." The bottle is placed on an oven gradually heated up to 150° Fahrenheit. Then every two minutes one ounce of sal ammoniac is added till a pound has been put in; when that is dissolved, the twentieth part of a pound of granulated tin is added till a pound has been put in. When this is dissolved and the solution is fine, the bottle is taken off the oven and the solution allowed to fine for two days. This solution is mixed with the colours to be printed. The skins are prepared for the printing by being dipped in sulphuric acid and warm water. They are then immersed in cold water, and undergo the process of "striking out." When half dry they are ready for printing. The printing table and other accessories are the same as those ordinarily used.

[Printed, *ed.* No Drawings. See *Repository of Arts*, vol. 8 (*enlarged series*), p. 36; *London Journal* (*Newton's*), vol. 26 (*conformed series*), p. 264.]

A.D. 1844, October 29.—N° 10,366.

SCURR, THOMAS.—"Improvements in tanning hides and skins." The invention consists in using an "open cylindrical frame" "made up of bars placed a small distance apart," and having compartments in the inside, on which the hides, &c. are

placed. The cylinder with the skins in it is immersed in tan liquor and caused to revolve slowly.

If desired the cylinder may be only half immersed in the liquor.

[Printed, 6d. Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 74. London Journal (*Newton's*), vol. 26 (*conjoined series*), p. 306; and Mechanics' Magazine, vol. 42, p. 441.]

A.D. 1844, December 2.—N° 10,414.

COLOMBIER, RENÉ JOSEPH LE COMTE DU.—“Improvements
“ in machinery for splitting and cutting skins and hides.”

The patentee describes “a machine for splitting skins, which
“ consists of three distinct parts:—

“ First, of a moveable frame, upon which the skins are stretched
“ in a horizontal position.”

“ Second, of a support fixed at the lower part, the height of
“ which may be regulated.”

“ Third, of a circular cutter, turning horizontally from above,
“ and at a regulated distance from the part of the skin supported
“ on the frame.”

Also, a machine for dressing the surfaces of skins. The skin is placed on a frame and passed under cutters, which remove inequalities.

The description of this machine in the Specification is exceedingly confused, and hardly intelligible even with the aid of drawings. In places apparently the letters of reference are misplaced.

[Printed, 2s. Drawings.]

A.D. 1845, January 11.—N° 10,466.

KEASLEY, THOMAS.—“Certain improvements in the manufacture of leather, part or parts of which improvements are
“ also applicable to other useful purposes.” The patentee describes five methods of removing hides and skins from the tan liquor during the process of tanning, exposing them for a short time to the action of the atmosphere, and then immersing them again.

1. Two sets of hides, &c. are fastened to two frames which are suspended from the opposite ends of a vibrating lever, the bearing of which is on a framing placed between two tan pits. The two ends of the lever project over these tan pits. From the ends of

The beam is rope-passed under a barrel or winchlass, so that by turning the winchlass one end of the beam is depressed, and the other is raised, in such a way as to depress one set of hides, and to lift the other from the pit. By reversing the action of the winchlass the positions of the two ends of the beam and of the two sets of hides are reversed.

c. Instead of a vibrating beam, two fixed standards are used, supporting over two tan pits. At the extremities of these standards pulleys are placed. A rope passes round a barrel or winchlass placed between the two pits, and over the pulleys. The frames holding the hides are attached to the two ends of this rope. By means of the winchlass the hides are alternately raised and lowered. If necessary the standards may be displaced with and the pulleys fixed to a ceiling.

d. By using one pulley over a tan pit, instead of two pulleys over two tan pits, one set of hides can be worked instead of two.

e. A strong beam is placed over a series of tan pits, and a series of pulleys are fastened to this beam in such manner that the pulleys are over the spaces between the pits. A rope passes through these pulleys, and the frames with the hides are hooked to those parts of the rope which are over the pits. One end of the rope is attached to the beam, and the opposite end to a winchlass or barrel. By means of this winchlass the hides can be lowered and raised. If necessary the frames with the hides can be made to counterbalance one another by using two ropes instead of one, or by using a rope passing from the end of the beam through pulleys, round the winchlass, and then back again through pulleys to the end of the beam.

f. A railway is placed over the pits. Along this railway a travelling winchlass runs, by which the frame with the hides can be hoisted up from any pit. The frame after being hoisted up is supported from a hook placed over the pit.

(Printed by Trevelyan and London Journal (London), and at Cambridge.)

A D. 1876, January 10. 25 10, 177

Cox, James, and Cox, Charles. "Improvements in tanning and dressing leather;" the invention consists—

First, in attaching one "end or side," &c., one edge of each of a series of hides to the surface of a cylinder or roller which is *immersed in tan liquor to the level of the sole and caused to*

revolve. The hides are thus alternately hanging straight down underneath the cylinder in the liquor, and pressed together by their own weight on the upper surface of the cylinder.

Secondly, in attaching the edges of hides in the same manner to an endless band passing over either one or two rollers or cylinders, which endless band is half immersed in tan liquor.

Thirdly, in attaching edges of hides to the arms of an open radial wheel, made with four rectangular arms of sufficient width to allow the hides to be attached to them and revolving half immersed in tan liquor, and also in a modification of this machine which "shall be capable of having alternating motion "given," to it and shall accommodate two tan pits. To effect these objects the axis of the radial wheel rests on a wall between two pits. Two only of the arms are loaded with skins, so that they dip into the pits alternately, and the angular space between the two lots of hides is divided into two compartments "to contain "sandstone or other convenient and cheap matters in such "quantity as shall counterbalance the hides which may for the "time be raised above the liquor." By placing the larger portion of this weight of stones first in one compartment and there in another an alternating motion can be given to the machine. The same contrivance can be applied to a machine working in one tan pit only.

Fourthly, in "a revolving rectangular frame, in or to which "hides" "are attached at all ends and sides" (*i.e.* at all edges). The frame is half immersed, and in revolving causes the hides to be alternately in and out of the liquor.

Fifthly, tanning by making the tan liquor "circulate, move, or "vibrate" among the hides in the pits, by the contrivance forming the latter part of the next invention.

Sixthly, in "frequently and alternately withdrawing tan "liquor from, and introducing it into pits in which hides," &c. are "either suspended or lying." This can be done either by pumping, or by having communication between pits so that when one is full of liquor and the other empty, the liquor may be caused to flow out of the full pit, and half to fill the empty one.

[Printed, 1s. 4d. Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 141.]

A.D. 1845, May 22.—N^o 10,678.

WILKINS, EDWARD.—"An improvement or improvements in "*the manufacture of leather.*" Four improvements are described

by the patentee. The first consists in softening dried hides, kips, or other skins, before unhairing them, by placing them in an air-tight cylinder or pit, exhausting the air, and filling the pit with warm water of 80° Fahrenheit.

The second consists in modes of unhairing hides, &c. This is done by warming with a steam coil the lime water or other depilatory in which the skins are steeped. The liquid should be raised to a temperature of 80° Fahrenheit. Another method of unhairing described is to use as a depilatory a solution of "either warm or cold acid made from tan liquor, which liquor, when exposed to the air in a warm place, and fermented with yeast, will become acid in ten or twelve days." After the skins have been unhaird by any one of the methods above described, they are placed in an air-tight vessel. The air is exhausted, and warm water is forced in by a force pump at a pressure of about sixty pounds to the square inch; this water removes the lime or acid remaining in the skins. Another method of unhairing is to use weak tan liquor of the strength of from two to three degrees bark hydrometer. The hides, &c. are placed in an air-tight vessel, the air is exhausted, and the liquor let in at a temperature of about 80° Fahrenheit.

The third consists in impregnating hides, &c., tanned or untanned, with oil. The hides, &c., are placed in an air-tight vessel, the air is exhausted, and oil is forced into the vessel "by a pressure of about sixty pounds to the square inch." The temperature in the vessel must be maintained at about 80° Fahrenheit.

The fourth consists in a method of drying the hides, &c. by placing them in an air-tight chamber warmed by a steam pipe to a temperature of about 80° Fahrenheit. The air is exhausted from the chamber, and the vapour which arises from the hides in the process of drying is drawn off by an air pump.

[Printed, 4d. No Drawings.]

A.D. 1845, June 3.—N° 10,704.

THIRION, PIERRE.—(*Partly a communication.*)—"Certain improvements in dressing furs and skins." This invention relates, first, to the application of beating and fulling stocks to the dressing of furs and skins, instead of the ordinary method of softening them by treading them with the feet. The stocks employed will vary in size according to the kind of skin to be

dressed, and are "of a similar construction to the ordinary "fulling mill." After being submitted to the action of the beaters for a sufficient time, the skins are placed "in a heated "barrel, provided in its interior with radial pins for turning "the goods over and over." Sand, flour, sawdust, or some other suitable dry material is thrown in with the skins, and a rotary motion given to the barrel. By these means the skins are heated, the fat dissolved and absorbed by the dry substances. The next part of the invention relates to a process for cleaning the furs and skins of the wood, dust, sand, &c., which may have been used in the process of dressing, and is intended to supersede the present practice of beating by hand. This is effected by placing the skins in a cylindrical grating composed of metal rings which are attached together by horizontal rods passing through them and bolted at each end to a disc which forms the end of the grating. From some of the horizontal bars, pins project inwards by means of which the skins during the rapid revolution of the grating are thrown against the bars and cleansed.

[Printed, 1s. 2d. Drawings. See London Journal (*Newton's*), vol. 28, (*conjoined series*), p. 163.]

A.D. 1845, June 28.—N^o 10,744.

SNYDER, SIMON.—"Improvements in tanning hides and skins." The invention described by the patentee consists in preparing hides or skins for tanning "by puncturing them with small "holes partly through, or perforating them with holes entirely "through the hides or skins, either on the flesh or grain side, "so as to admit the tannin more freely and perfectly to penetrate and operate upon the hides or skins."

The best time for performing the operation is when the hide or skin is in "its most relaxed or reduced state." The punctures may be made either with a hand instrument with steel points, or by passing the hide, &c. "under or over a cylinder or flat surface "covered with steel points inserted at proper distances, varying "from one hundred or three hundred to the square inch."

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 7 (*enlarged series*), p. 118; Artisan, vol. 6, p. 253; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 13; Mechanics' Magazine, vol. 44, p. 351, and vol. 48, p. 317.]

A. D. 1844, October 10. N° 10,874.

JOHN FLETCHER, Claimant. "Improvements in the manufacture of "leather." The invention is divided into four parts.

The first is an improvement in manufacturing enamelled leather when sheep or lambskins are used. Instead of enamelling on the "grain" surface, as is usually done, the patentee removes the grain surface by splitting or buffing, and produces a "finish" on the surface thus obtained. This finished surface is then enamelled in the ordinary way. If the "flesh" side is to be enamelled, the same method is followed.

The second part of the invention is a method of shaving tanned or dressed hides. A set of knives are arranged "tangentially" on a roller. The hide is placed on a narrow bed under this roller, and is drawn forward by the action of two other rollers, between which an end of the hide is placed. As the hide is drawn forward the roller with the knives is caused to revolve, and the hide is shaved by the knives.

The third part of the invention is a method of pressing out the "grease or oil from sheep, lamb, and other skins," by passing them between two smooth rollers, of which the upper is pressed closely down.

The fourth part of the invention is a method of unhairing, paring, greasing, and fleshing hides and skins by passing them under a roller having a series of blades set radially from the axis, and also of removing surface grease and filth from hides, &c. by passing them under a cylindrical rotatory brush.

[Printed, for Drawings See Repository of Arts, vol. 7 (subsequent copies), p. 482; London Journal (Newspaper), vol. 46 (subsequent copies), p. 444.]

A. D. 1844, October 31. N° 10,880.

JOHN FLETCHER, Claimant. "Improvements in machinery for preparing skins for tanning and dressing." A carriage travelling on wheels supports three rollers, over two of which an endless wire cloth passes. An endless leather cloth passes over all the three rollers outside the wire cloth, and travels with it. On this leather cloth the skins are placed; motion is given to the rollers, and the carriage is passed under a large revolving cylinder, in the circumference of which are set a series of knives or scrapers, and of thin

stones or rubbers. The skin is operated upon by these scrapers or rubbers at the time (apparently) when it is being carried by the endless leather cloth over the endless wire cloth which passes over two of the rollers. A roller having the ends of its axis supported by levers presses on the endless leather cloth in one place, so as to keep the skins distended. The knives and stones on the cylinder being set between bars and secured with tightening screws, can be adjusted, and removed. The cylinder can be arranged to carry knives only or stones only, the knives being used to operate on both sides of the skin, the stones on the green side only.

By another arrangement of the machine the knives or scrapers instead of being carried by a cylinder are carried by endless chains passing over rollers, and have "a yielding or elasticity" given to them by springs. When this method is followed an apron or endless cloth composed of a series of wooden lathes is used in place of the wire cloth.

[Printed, 10d. Drawings.]

A.D. 1845, November 11.—N° 10,935.

BIELEFELD, CHARLES FREDERICK.—"Improvements in the manufacture of embossed or pressed paper, calico, leather, and other fabrics and articles." The first part of this invention relates to making mouldings from preparations of fibrous matters by the employment of one or more rollers. For this purpose leather is not used alone but in combination with paper or papier maché. If the mouldings are to be made separate the composition prepared is passed between engraved rollers; but if to be made on wood the composition is fixed on "a bed moving under the roller at the surface speed of the roller." Another part of the invention relates to the use of a "plastic preparation of fibrous materials prepared with india-rubber, with glue, treacle, and glycerine, for the purpose of making a fabric or sheets of matter to be embossed in the manner of papier maché, whether with paper, calico, leather, or other woven fabric." For this purpose the india rubber is dissolved and mixed with treacle and glue and ground fibrous materials; a small quantity of glycerine may be added.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 7 (*enlarged series*), p. 352; Patent Journal, vol. 1, p. 63.]

A.D. 1846, March 25.—N° 11,142.

WARINGTON, ROBERT.—“Improvements in the operation of tanning.” The improvements are described by the patentee as applicable to all kinds of hides and skins, whether dry, salted, or fresh, and are :—

“The use of carbonates of soda or potass” dissolved in water for soaking the hides or skins, so as to enable the hair being readily removed.”

“The employment of baryta, potass, soda, muriatic acid, nitric acid, oxalic acid, and any other acid (except the sulphuric), as also vegetable matters, as culinary rhubarb, sorrel, apple, marc, &c., for the purpose of facilitating the removal of the hair and at the same time swelling the hide or skin, or for swelling them only.”

“The use of carbonates of ammonia as a grainer for the purpose of graining hides or skins.”

“The employment of vegetable matters and chemical agents capable of retarding oxidation,” such as culinary rhubarb, bruised potatoes, “gum, starch, certain compounds of sulphur, such as sulphuret of sodium, sulphite or hyposulphite of soda, and analogous compounds.” “Such matters or agents to be used with the tanning agent employed.”

“The use of bichromate of potass in solution, or diluted sulphuric acid,” in which, when largely diluted with water, the skins or other animal substances are to be immersed for the purpose of preserving them.

[Printed, 4d. No Drawings. See Patent Journal, vol. 1, p. 311; Engineers' and Architects' Journal, vol. 9, p. 285.]

A.D. 1846, May 22.—N° 11,217.

WRIGHT, CHARLES.—“Certain improvements in the manufacture of boots and shoes.” These improvements are, 1. The use of plugs instead of sewing or pins in fastening the upper leather to the soles, the heels to the soles, and the inner and outer soles together in boots, and shoes, goloshes, and clogs.

2. The use of a waterproofing material composed of indian rubber dissolved in spirits of coal tar, litharge ground in oil, ground ammonia, and vegetable or other black simmered together, or of indian rubber dissolved in linseed oil over a slow fire, litharge ground in oil, and vegetable, or other black. Two or three coats are put on to the leather with the hand or brush.

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3. "In ventilating boots and shoes by the introduction of an air passage through the heel."

[Printed, 6d. Drawings. See London Journal (*Newton's*), vol. 30 (*continued series*), p. 407; Patent Journal, vol. 2, p. 446.]

A.D. 1847, June 8.—N° 11,735.

ELLEN, SAMUEL.—"Improvements in the manufacture of Losh hide leather and other oiled leathers." The invention relates to performing the operation called "frizing," i.e. removing the grain in the process of converting hides or skins into losh leather. The hide or skin is fixed tightly by bands on a drum or cylinder which can be turned round by means of handles. A knife works backward and forward along this cylinder in a plane parallel to the axis of the cylinder. This knife is set in a bar which works on bearings placed on each side of the cylinder, and has the backward and forward motion given to it by connecting rods worked by a crank on a crank shaft. The knife passing along the surface of the leather placed on the cylinder removes the grain, but as it is desirable that the knife should only come in contact with the skin in the downward or forward stroke of the knife, the parts of the framing on which the bearings by the bar holding the knife rest, are affixed by hinge joints to the main framing, and during the upward or backward stroke of the knife these parts of the framing are lifted by the action of connecting rods worked by an excentric on the crank shaft.

[Printed, 1s. 2d. Drawings.]

A.D. 1848, January 20.—N° 12,035.

DUNCAN, JOHN.—"Certain improvements in tanning hides and skins. The first part of the invention consists of a method of extracting the tannic acid from the materials containing it. In the ordinary spender pit is placed a false bottom perforated with holes. Beneath this is a well like that in common pits; this well can, when necessary be emptied by a pump. Underneath the false bottom and over the well is placed a close bottom of wood in which is a plug or sluice which can be opened or shut from above.

Ground or powdered bark is placed on the false bottom, and water is sprindled over it by a percolating trough herein-after *described*, until the bark becomes saturated. It is allowed to remain in this state for about six hours. When the bark is

saturated the same process is gone through again, and this is continued until the bark is exhausted. The tannin is then extracted by a process thus described by the patentee:— "I construct a large tray or trough of a size sufficient for its bottom to cover exactly the top of the spending pit. The sides of this tray or trough should be of wood and water-tight, and not exceeding twelve inches in depth. The bottom should be formed of zinc or other materials not acted upon by tannic acid, perforated with extremely small holes all over it. This tray or trough which I call a percolator, being placed over the mouth of the pit in which the saturated or wetted bark is lying in steep, water must be made to pass into and upon or across the bottom of the percolator by any suitable apparatus in a sheet or stream, in such manner that being thrown equally over the whole bottom, the water may fall by means of the perforated holes equally and at the same time all over the surface of the bark. The descent of the water equally over the entire surface of the bark will be assisted by placing a cloth, which I recommend to be a hair cloth, over the bottom of the percolator." Before the water begins to descend in this way, the plug in the close bottom is withdrawn, so that the liquor passes slowly into the pit beneath. When it is found that the liquor thus passing is growing weak, the plug is replaced, and the passage of water into the percolator stopped for a time sufficient to allow the liquor in the pit to saturate the bark. If catechu or other like extractive matter is used with this process it should be ground to a fine powder and mixed with an equal weight of sawdust or bark. The patentee recommends exhausted oak bark as the substance best fitted for his process.

The second part of the invention consists of a method of pressing the hides, &c. in the pit during the process of tanning. For this purpose a thick board perforated with holes and fitting easily in the pit is placed over the hides, and a box with a heavy weight in it is placed on this board. This weight is allowed to remain on the hides for about a quarter of an hour every three hours until the hides are tanned. Another method of pressing the hides is to lower heavy weights or runkeys upon the board by means of travelling cranes and tackles. Another method to be used when hides, &c. are tanned in large shallow tanks, is to arrange the hides in heaps of equal height close together, to cover these heaps with large boards, one board cover-

ing each heap, and then to draw over the boards a heavy roller resembling a garden roller.

[Printed, 8d. No Drawings. See Artisan, vol. 6, p. 328; Patent Journal, vol. 5, p. 287.]

A.D. 1849, February 8.—N° 12,466. (* *)

CLARKSON, THOMAS CHARLES.—“ Certain improvements in
“ the manufacture and application of leather, and certain vegetable
“ substances, to be used in combination with leather, india rubber,
“ canvas, silk, cotton, wool, and other fibrous substances, in the
“ manufacture of certain waterproof articles; and these are, first,
“ The mode of tanning leather, in which the hide is suspended in
“ the pits, and subjected to the action of a gradually charging
“ fluid.”

Second. Combining thin or split hides in layers, placing the
“ butt ” to the shoulder part of the hide, instead of employing
thick substances of leather, as hitherto, in the manufacture of
straps for driving bands or harness; also uniting the thicknesses
of leather for a driving band or strap, while encircling a drum or
other surface.

Third. “ Combining cork, wood, india rubber, and other vege-
“ table substances in alternate layers, with leather or with fibrous
“ materials, such as cotton, silk, canvas, or wool, and causing the
“ several layers to adhere to each other by a solution of india
“ rubber, marine glue, or other suitable cement, so as to produce
“ waterproof material applicable for and in the manufacture of
“ various articles.”

Fourth. “ Combining a layer or layers of cork, and a layer or
“ layers of tarlatan, or other woven fibrous material, with a solu-
“ tion of india-rubber, in the formation of hat bodies, and also
“ the application of a solution of india rubber to the manufacture
“ of hat bodies of cork, for the purpose of retaining them in shape
“ during and after their formation.”

[Printed, 8d. No Drawings. See Mechanics' Magazine, vol. 51, p. 141; and Patent Journal, vol. 8, pp. 138 and 219.]

A.D. 1849, February 12.—N° 12,470.

HARRIS, WILLIAM.—“ A new or improved mode of preparing
“ leather.”

[No Specification enrolled.]

A.D. 1849, April 24.—N° 12,582.

VERNET, Lewis.—"A method of preserving from destruction " by worms, insects, decay, and fire, certain vegetable and animal " substances." This invention consists in the use of a weak solution of arsenic applied to the substances which are to be preserved. The solution is prepared by boiling some arsenious acid in water, in the proportion of at least one pound of arsenic to fifty gallons of water. The solution is then mixed with water, and the substance to be acted upon dipped for a moment in the diluted solution.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 14 (*enlarged series*), p. 384; *Mechanics' Magazine*, vol. 51, p. 405; *Patent Journal*, vol. 5, p. 86.]

A.D. 1849, May 24.—N° 12,618.

CROSSE, ANNAW.—"Improvements in tanning hides and " skins." The invention consists:—

1. In unhairing hides and skins which is effected by the application of hydrosulphuret of lime in which the hides or skins are soaked. By this means the hair is loosened and may be removed in the ordinary way.

2. In producing electric or galvanic effects on the matters in tan-pit. On one side of the pit is placed a plate of lead and on the other a plate of zinc, the plates covering the sides of the pit. The two plates are connected at the upper parts above the liquid by a strap of either metal. The skins or hides are suspended in the pit, filled with water, and remain three or four days. The water is then removed or converted into ooze or tanning liquor by adding bark or other suitable matter, or the water is replaced by tanning liquor of a strength of about 15 degrees of a saccharometer, and the liquor is kept up to that strength for a week. The strength may then be increased 5 degrees a week till it reaches 45 degrees. This process may be varied, and the strength and progressive increase of strength in the tanning liquor modified.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 15 (*enlarged series*), p. 85; *Mechanics' Magazine*, vol. 51, p. 524; *London Journal (Newton's)*, vol. 86 (*condensed series*), p. 819; *Patent Journal*, vol. 5, p. 115.]

A.D. 1849, June 14.—N° 12,660.

HAINES, MICHAEL JOHN.—"Improvements in the manufacture of packing for steam engines, cylinders, and other purposes.

“ part of which improvements are applicable to the manufacture
 “ of waterproof fabrics and leather.”

On the 14th December 1849, a Disclaimer was filed of all that part of the title which is contained in the words, “ part of which
 “ improvements are applicable to the manufacture of waterproof
 “ fabrics and leather.”

[Printed, 6d. Drawings. See Repertory of Arts, vol. 15 (*enlarged series*), p. 26; London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 395; Mechanics' Magazine, vol. 51, p. 596; Patent Journal, vol. 8, p. 152.]

A.D. 1849, November 17.—N° 12,846.

NEWTON, ALFRED VINCENT.—(*A communication.*)—“ Improve-
 “ ments in manufacturing leather.” The patentee describes the following process for tanning 100 calf skins :—“ Twenty pounds of
 “ sulphate and alumina and potash [alum] and ten pounds of chlo-
 “ ride of sodium,” are mixed with sufficient water for their solution, and are poured into a vat called N° 1. Into another vat called N° 2, is poured a solution of one hundred pounds of mimosa catechu, supposing this to be the substance employed in tanning. Into a third vat called N° 3 is poured “ a solution of four pounds of sul-
 “ phate of alumina, either alone or in combination with two pounds
 “ of chloride of sodium.” One-fifth of the contents of N° 1, one-tenth of the contents of N° 2, and one-fourth of the contents of N° 3 are then poured into a large vessel suitable for soaking the skins, called vat A. Enough water to cover the skins is added, and the liquid is heated to 25° Baumé. The skins are then placed in the vat and are stirred round in it for an hour, after which they are taken out. One-fifth of the contents of N° 1, one-tenth of the contents of N° 2, and one-fourth of the contents of N° 3 are then poured into vat A, in which the skins are again placed and stirred round for several hours, the temperature being kept at twenty-five Baumé. The skins are then taken out and afterwards re-immersed in vat A, and allowed to remain until next morning, when are taken out. The liquor is then made lukewarm, and one-fifth of the contents of N° 1 and one-fifth of the contents of N° 2 are poured in. The skins are then soaked, taken out, re-immersed, and left in the vat till next day. After this the skins remain in soak, but they should be taken out at least once a day and the liquor should be stirred briskly round. On the sixth or seventh day from the commencement of the operation the skins are taken out and the remainder of the contents of N° 1 and N° 3,

and one-fifth of the contents of N° 2 are poured into vat A. The skins are then re-immersed, and soaking and removal are then continued as before until the fourteenth or fifteenth day, when two-fifths of the contents of N° 2 are poured in; six or seven days afterwards "the remaining two-fifths, viz^t, twenty pounds of "mimosa catechu" are added.* The strength of the tanning liquor must be kept up during the operation. The leather will be tanned in about four or five weeks from the commencement of the operation.

Another method is to submit the skins to the above-described operation for ten days, and then to place them in powdered bark in a tan pit. The powder is damped with some liquor from vat A, or with bark liquor sharpened a little. Liquor is kept passing through the pit by pumping it from the bottom of the pit and letting it fall into the pit again.

The operation first described (apparently) is stated by the patentee to apply to all kinds of soft leather, the quantities of sulphate of alumina and potash, chloride of sodium and mimosa catechu used, varying, however, according to the kind of skin. For hard leather solutions of alumina and potash, with a small quantity of chloride of sodium are employed, and the hides are placed in a flat vat and treated in the same manner as is required for the manufacture of Hungary leather. A strong solution of mimosa catechu being added to the other solution at the end of about seven or eight days. At the end of twenty days the skins which have been thus treated are placed in the tan pit.

[Printed, 4d. No Drawings. See London Journal (*Newton's*), vol. 86 (*continued series*), p. 810; *Mechanics' Magazine*, vol. 52, p. 415; *Patent Journal*, vol. 9, p. 91.]

A.D. 1850, May 25.—N° 13,081.

RADLEY, WILLIAM, and MEYER, FREDERICK.—"Improvements in treating fatty, oleaginous, resinous, bituminous, and cerous bodies in the manufacture and application of them and of their components and subsidiary products, together with the apparatus to be employed therein to new and other useful purposes." This invention (besides many other claims) consists in the application of glycerine to the manufacture of shoe and har-

* There would seem to be some mistake here, seven-fifths of No. 2 as altogether disposed of, and supposing the patentee to mean by two-fifths of No. 2 merely so much mimosa catechu, the quantity should be forty and not twenty pounds.

ness blacking, and also to "unlining" skins and hides in the preparatory processes of tanning. In the latter case the skins and hides, after the process of unhairing, are immersed in a pit containing a solution of glycerine in combination with a carbonated alkali, or with sulphuric, lactic, phosphoric, or other acid. The invention also claims the production and use of a class of saponaceous compounds from fatty and oleaginous acids, and from resinous and bituminous acids with the metallic oxids generally, and applying them simply or in combination with gutta percha, caoutchouc, wax, shellac, and other resinous bituminous and cerous bodies for the purpose of making cements, painting, and waterproofing leather and other fabrics, and for varnishes and japans.

[Printed, 1s. 4d. Drawing. See *Mechanics' Journal*, vol. 53, p. 456; *Patent Journal*, vol. 10, pp. 104, 115.]

A.D. 1850, July 17.—N^o 13,178.

VARILLAT, JEAN JULES.—"Improvements in the extraction
" and preparation of colouring, tanning, and saccharine matters
" from various vegetable substances, and in the apparatus to be
" employed therein."

[No Specification enrolled.]

A.D. 1850, July 23.—N^o 13,190.

JENNINGS, HENRY CONSTANTINE.—"Improvements in rendering canvas and other fabrics and leather waterproof." The invention depends on the decomposition of mineral or metallic salts by soap; by double decomposition all kinds of soluble metallic salts, and all kinds of soluble soaps will produce the results to be obtained, viz., "a very insoluble body or varnish." For example, soft soap is dissolved by heating in a copper of water, when at the boiling point sulphate of zinc is added. "The solution of soap and the soap itself is decomposed, and the whole of the metallic soap rises to the top. This when cold becomes a hard white mass, and is taken off the liquor," It is reboiled in fresh water at boiling heat and all soluble matter removed. For leather, the following preparation is made:—The metallic soap is dissolved in raw linseed oil at the temperature of 225 degrees Fahrenheit, the leather is placed in the solution, and kept there till all the water and air contained in the leather is expelled, and the solution is cold. The excess of liquid is wiped

off and the leather dried. "All the soluble metallic salts have the property of decomposing solutions of soft or hard soap, & each metal gives its own peculiar color to the soap."

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 17 (*enlarged series*), p. 100; Mechanics' Magazine, vol. 24, p. 96; Engineers' and Architects' Journal, vol. 14, p. 119; Patent Journal, vol. 10, p. 199.]

A.D. 1861, April 15.—N° 13,589.

EAST, FREDERICK WILLIAM.—"Improvements in dressing, "embossing, and ornamenting leather." The invention consists in dressing, &c. the flesh instead of the grain side of leather, and is stated to be applicable to "sheep and other skins dressed with "shumac, or other tanning matter, but not to oil tanned skins. Sheep skins tanned with shumac are stated to be best for the process which is as follows:—"The skins are immersed in warm water, brushed on the flesh side, and folded with the flesh side outwards. The edges are then sewn together so as to prevent the dye from getting into the interior of the bag thus formed, or instead of folding the skins, two skins may be laid together with the grains sides touching, and the edges then be sewn together.

The skins are then "soured," "sweetened," and dyed in the usual manner, but weak dye liquor is used instead of strong, and the process of dyeing is repeated more often than is usually done. The skins are then rinsed, opened out, dried, "perched" with a knife "to loosen or open the fibre, folded again with the flesh side outwards, and passed through a solution of glutinous matter. The skins are afterwards strained, dried, and the surfaces are bruised with cork. When the process of embossing is to be performed, water is applied to the skins, and they are laid on the grain sides for about two days, covered so as to exclude the air, by which means the moisture passes through so as to act on the glutinous matter and to cause it to produce a gloss and a deeper tone of colour on the embossed or pressed parts of the surface. The embossing is done by heated rollers or surfaces similar to those employed for embossing velvet, heated to about 250° Fahrenheit.

Pigments and metals may be used for giving ornament by taking them in a state of powder and sifting them over the skin before the embossing takes place. The pigments or metals will then in the embossing become fixed in those parts of the skin to

which pressure is applied, and can be subsequently dusted off or removed from the other parts.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 18 (*enlarged series*), p. 375; London Journal (*Newton's*), vol. 39 (*conjoined series*), p. 517; Mechanics' Magazine, vol. 55, p. 336; Patent Journal, vol. 12, p. 39.]

A.D. 1851, April 15.—N° 13,590.

STONES, WILLIAM BENSON.—“Improvements in the use and “treatment of peat and its products, and other carbonaceous matters, and also for apparatus applicable to such and other “chemical purposes.” Among the improvements here claimed is that of using the grease obtained from peat by distillation in currying leather. The grease is freed from acid and other corrosive parts by the action of chemical agents. For this purpose a cylindrical churn is used which can be kept at any temperature, and is fitted inside with a number of tilting shelves. The churn turns on a fixed axle pierced horizontally, so that the gases, &c. to be used in the process, are introduced at one end of the axle and drawn off at the other. The grease when so prepared renders leather elastic and impervious to wet. By redistilling the grease “a residuum, or resino-adipose wax, which may “be termed peacerine,” is obtained. This, when slightly spread over the leather and rubbed, gives it a black polish.

[Printed, 10d. Drawings. See Repertory of Arts, vol. 19 (*enlarged series*), p. 220; Mechanics' Magazine, vol. 55, p. 338; Patent Journal, vol. 12, p. 22; Journal of Gas Lighting, vol. 2, p. 209.]

A.D. 1851, May 3.—N° 13,621.

PYKE, JAMES.—“Improvements in the manufacture of leather “also in the making of boots and shoes.” The improvements in the manufacture of leather consist, first, in applying heat when extracting tannin from bark or other material. For this purpose vats or pits are used, in the bottom of which pipes, heated by hot water or steam, are placed. A false bottom perforated with holes is placed in the vat, and on this the material containing tannin is put. The liquor placed in the vats is heated by the pipes, and is drawn off from below. When cold it is placed in pits of ordinary construction. Covers are placed on the top of the vats to prevent the atmosphere from getting to the liquor. These covers have water joints round the edges. In tanning the patentee

suspends the hides vertically in the pit from boards arranged so as to form a cover to the pit.

Next, in rolling leather between an ordinary metal roller and a roller of vulcanised india-rubber placed on an axis and covered with rings of metal. The leather may also be rolled on a metal bed under an elastic roller, or on an elastic bed under a metal roller.

The improvements in the manufacture of boots and shoes are as follows:—An "upper" is placed upon a last and the last with the upper on it is forced by pressure to pass partly through an opening in a block of india-rubber contained in a box. There is a filling piece of wood on which the "upper" and the upper portion of the last rest, the pressure being applied to the sole of the last. On the sole of the last is an insole. After the last has been pressed through the india-rubber the pressure is withdrawn, and the india-rubber returning to its original form presses down on the insole the edges of the "upper," which had before projected beyond the insole.

The box containing the block of india-rubber is then removed, and the sole intended to be attached to the "upper" is put in position against the insole and the folded down edges of the "upper." A perforated metal plate is placed on the sole, and on this plate is placed a frame containing a series of little punches which are caused by pressure on the frame to pass through the holes in the plate into and through the sole, into and through the edges of the "upper," and into the insole. Brads are then passed in a similar manner through the sole, "upper," and insole, so that the ends of the brads come against a series of little steel inclines contained in the sole of the last, and by pressing against these the ends of the brads are turned so that the brads are clenched or rivetted.

The patentee also describes a method of connecting the parts "of uppers" by rivets consisting of "hollow shells similar to those used for closing letters by," or by rivets with heads and hollow stems "which after passing through the materials of the 'uppers' have hollow or dished washers placed upon them."

[Printed, 1s. 4d. Drawings. *Repertory of Arts*, vol. 19 (*enlarged series*), p. 22; *Mechanics' Magazine*, vol. 68, p. 397; *Patent Journal*, vol. 12, p. 77.]

A.D. 1861, May 29.—N° 13,646.

PEGG, JOHN.—"Improvements in producing corrugated surfaces on leather." This invention consists in the employment of

strands or bands of india-rubber in combination with leather, and in corrugating the leather when so combined. For this purpose vulcanized india-rubber is preferred. The strands or threads of india-rubber are held distended in a suitable frame. India-rubber cement is then applied to one side of the leather, and the leather placed in contact with the stretched bands of india-rubber. On the other side of the bands is applied a second piece of leather or some woven fabric. The whole is then pressed between rollers. To corrugate this substance it is damped and passed between grooved or fluted rollers, which may be heated or not.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 19 (*enlarged series*), p. 11; Mechanics' Magazine, vol. 55, p. 408; Patent Journal, vol. 12, p. 113.]

A.D. 1851, June 12.—N° 13,658.

CALVERT, FREDERICK CRACE.—“ A new application of certain fluids for manufacturing extracts applicable to the processes of dyeing, printing, and tanning, and in the apparatus connected therewith.” This invention consists “ in employing certain volatile fluids never before used for that purpose for manufacturing extracts to be used in dyeing, printing, and tanning.” It is essential that these fluids should be easily transformable into vapour and recondensable, and also that their chemical composition should be such as to enable them to dissolve the colouring or tanning matters from the substances in which they are contained, and also resins and the resin of gum resins. The most suitable fluids are wood naphtha, pyroligneous spirit, acetone, or the hydrate of oxide of mesithyle, turpentine, camphine, the volatile oils obtained by the destructive distillation of resins “ the volatile oil obtained by the destructive distillation of shale coal, and any other bituminous shale or schist, also the volatile carburetted hydrogens obtained by the distillation of coal tar, which are usually known by the name of coal or mineral naphtha; also those which may be obtained from the distillation of vegetable tars, and from peat or bog, or from tar and oil obtained from peat and bog; lastly, alcohol and ethers, such as the hydrate of oxide of ethyle, the acetate of the oxide of ethyle or other ethers.” The apparatus used in manufacturing the extracts consists of a boiler from the lid of which a tube runs *to a condenser*. The fluid volatilized in the boiler passes to the *condenser*, and when condensed descends into a receiver where it

is kept till wanted for use. Below this cavity are two large boxes filled with copper and divided into compartments. The upper parts of the boxes are provided with cones which serve as heads of stills and communicate by two main pipes with a separate condenser. Into these boxes is put the mass of other substances containing the coloring or tanning matter to be extracted. The substance may be either dry or moist being moistened with water, or with solutions of fixed alkalies. The alkalies and substances presenting an alkaline reaction may also be mixed in a dry state with the substance containing the coloring or tanning matter. In commencing the operation the fluid is let down from the cistern into the cones or other substance in the boxes, or if preferred it may be brought in a state of vapor direct from the boiler. After remaining a sufficient time in the boxes the fluid passes into a cistern and thence into the boiler where it is volatilized, and leaving behind it the coloring or tanning matter, and the water or gum resin passes again into the condenser and thence into the upper cistern and the boxes. When the fluid has been sufficiently employed water may be substituted. After this heat is applied to steam pipes in the false bottom of the boxes to heat the mass of organic substance from which the coloring or tanning matter has been extracted, and if any of the volatile fluids have remained mixed with or absorbed by the substance they are driven through the still heads and pipes into the separate condenser. In treating substances containing tanning matter or principle instead of employing the above apparatus and a volatile fluid simply an alkali or a substance presenting an alkaline reaction may be used.

(*Revised, and* *Proceedings Soc. Mechanical Magazine, vol. 10, p. 411*.)

A D 1831, September 11. N^o 13,716.

VALLIAT, WILLIAM JEAN JACQUES. "Improvements in the
" extraction and preparation of coloring, tanning, and escharotic
" matters from various vegetable substances, and in the apparatus
" to be employed therein." This invention relates "to the whole
" of the operations for obtaining, from the bodies which contain
" them, substances which, when manufactured, produce extracts
" for dye stuffs, sugar, tannic acid, extracts of liquors, and
" generally from all kinds of vegetables. The invention consists
" of four processes, namely, first the cutting operation to the
" treatment of logs of wood; second, the maceration of the

"extracted matters; third, the evaporation; and, fourth, the final "concentration of the extracted elements when necessary." The first part of the invention relates to a machine for cutting logs of wood by submitting them to the action of one or two cylinders furnished with fluted and flat cutters. The second "apparatus is "for the dissolving and separation of soluble vegetable matter "from the insoluble bodies to which they are united by distilled "water at a temperature less than one hundred degrees centigrade." This consists of a reservoir in which are fixed ten receivers of a cylindrical shape. Each receiver is furnished with a plate which has a wire cloth resting on a hollow made in the point of junction of the receiver with the bottom of the reservoir. It is on this plate that the wood or matter to be treated is laid, and the plate may be removed when required. Each receiver, as well as its plate has a vertical shaft running through it which receives a rotary motion from a shaft under the reservoir. These vertical shafts have each an arm or blade fixed a short distance above the metallic cloth of the plate, and make about 80 revolutions a minute, and mix the matter with the liquid in the receiver. The dye woods or other substances after being cut up are placed in the first, second, and third receivers, the water in the reservoir being 90°. Water is then added to the substances in the receivers, varying in quantity according to their nature. After 15 minutes stirring dye-wood is placed in the 4th receiver, and the liquid from the 3rd passed into it. That from the 2nd passing into the 3rd and so on. The 1st receiver is then filled with hot water, and each quarter of an hour a fresh receiver is filled with dye wood, and the liquid passed on as before.

The third part of this invention relates to a displacing apparatus with two compartments or cavities, which are terminated at their lower extremities by two inverted domes. These domes are fixed to a circular piece terminated by two axes, the centres of which turn on the same line, so that it is possible to change the respective positions of the two compartments. Between each dome and each compartment two perforated plates are placed and pressed one against the other. The compartments are surrounded by a double case which is filled with low pressure steam. The compartments are closed at their open ends by caps, and each cap is furnished with a cock, the object of which is to receive alternately the injection when it is down, or to let the liquid escape when it is raised. The cavities are filled with the matter to be exhausted

and the caps replaced; the lower one is placed in connection with an injecting pipe communicating with a forcing pipe, and the other with a pressure valve moderator of ordinary construction. Hot water is injected, "and when the apparatus is filled with water, the pressure valve is filled in such manner as to obtain a permanent tension in the interior of the apparatus, and regulated according to circumstances and the degree of heat employed." "The pressure valve being regulated, the injection and the liquid is run out by the pipe of the pressure valve, and falls in the concentrating apparatus." When the substance in one compartment is exhausted it is removed and fresh put in. The position of the compartments will then be inverted and the process begin afresh.

This invention also relates to an apparatus for evaporating in vacuum with double and triple effect, by means of the waste steam of an engine, or by any steam expended at less than 100° working by the differential vacuum of one apparatus to another. This is specially adapted for the manufacture of beet-root sugar. There is also a further apparatus described for the final concentration of matter extracted. This consists of an upper dome and a lower vessel or basin divided by a metallic plate. The basin is fitted with a coil. A shaft runs vertically through the whole apparatus, and in that part which passes through the dome has an arm to which is attached a scraper to detach the pulpy matter from the metallic bottom. In the bottom are openings which communicate with a low, in, but separated from, the basin below. The openings can be opened and closed by a sliding plate. Water is introduced into the basin till it reaches above the coil pipe. A heat of 70° or 80° is obtained which serves to heat the metallic bottom. A vacuum is then produced in the dome, and the liquid is be concentrated admitted. After a sufficient time the pulpy matter is scraped off, and extracted by means of the openings in the bottom.

[Printed, 2s 3d. Drawings. See *Mechanics Magazine*, vol. 39, p. 487.]

A. D. 1861, November 13. N° 13,808.

BERNHARD, JULIAN. — "Improvements in the manufacture of leather or dressed skins, and of materials to be used in lieu thereof, and in the machinery or apparatus to be employed in such manufacture."

This invention relates, first, to a mode of graining or ornamenting leather by pressure. For this purpose an ordinary hydrostatic press is used, the travelling table of the ram being fitted with a flat-surfaced steam chest to aid in producing the grained figure. As the object of this part of the invention is to obtain an accurate copy of a good piece of morocco, &c., an original skin is used as the matrix, and an electrotype plate made from it. The plate is laid on the steam chest with the grained surface upwards, and upon it is laid the skin to be operated on, and on that a sheet of vulcanized india-rubber. Pressure is then applied. The pattern may, if preferred, be engraved on a metal plate,

The second invention relates to an improved shaving or splitting machine. On two longitudinal and two transverse standards is fitted a metal box, which is enabled to traverse in an accurate horizontal plane from one end of the frame of the machine to the other. This box is formed into a "solid botom, on the inside " upper surface of which are a series of ribs or narrow projections " on which a slab or table of porous stone or other permeable " composition or material is laid so as to leave an air space " beneath." By means of a flexible pipe the air in the box can be exhausted even while it is travelling along the frame. The leather is laid on the porous slab, and the air in the box being exhausted it is firmly held down during the shaving action.

" The cutting action of the knife and the traversing action of " the porous table are obtained from the main horizontal driving " shaft carried in bearings in the side standards beneath the level " of the box." " The revolution of the shaft causes the knife to " oscillate or traverse rapidly back and forwards across the machine by a parallel movement, the cutting edge shaving off " the upper side of the leather in one unbroken sheet, leaving the " shaved skin of perfectly uniform thickness beneath. As the " horizontal traversing cut is being made the skin is kept up to " the cutting edge by the traverse of the table."

The invention also relates to the manufacture of a material as a substitute for leather. It is " composed of two or more folds " of materials joined or united by any suitable cement, such as " caoutchouc, gutta percha, or a compound of both." A fabric that is as strong transversely as longitudinally may be made by cementing two fabrics " in such manner that their warps shall " cross each other at or near a right angle."

Another head of the invention relates to dicing leather, that is, producing a diamond-lined ornamental surface. The skin is laid on a flat table made to traverse beneath a series of markers made of any suitable material. A stationary beam over the table carries the row of markers. As the table traverses, the markers produce a series of straight lines on the leather. The cross lines to complete the pattern can then be added at any angle.

[Printed, 1s. 6d. Drawings. See *Mechanics' Magazine*, vol. 34, p. 416; *Practical Mechanic's Journal*, vol. 3, p. 84.]

A.D. 1851, December 1.—N° 13,837.

LAYCOCK, (Inventor). — "Improvements in unhairing and "tanning skins." Five improvements are enumerated by the patentee.

First, for unhairing, the patentee states that he uses a mixture of "soda ash, pearl ash, potash, or any other strong alkali and six "pounds of unslacked lime," boiled together. Water is added after the boiling, and the skins are immersed in the solution thus prepared.

Secondly, for sheep skins. The patentee states that he applies by means of a brush some of the solution above described to the flesh side of the skin.

Thirdly, for bait, water and sour sulphuric acid are to be used instead of hen and pigeon dung. When the skins have "run down" they are to be worked out in clean water, after which the acid is to be killed with a little old human urine and water, and the skins are to be worked out in the usual way.

Fourthly, for tanning. The patentee states that he uses sumac terra japonica, sulphate of potash, and alum, boiled together, and then mixed with a solution of oak bark.

Fifthly, the patentee states that the grain must be set, in the first instance, with weak liquor made as last above described.

[Printed, 4s. No Drawings. See *Mechanics' Magazine*, vol. 34, p. 174.]

A.D. 1851, December 31.—N° 13,886.

FROGGART, ROBERT BUCK.—Improvements in the preparation of compounds for making leather, &c. waterproof and fire-proof, and also in the machinery employed.

For waterproofing leather, &c. a solution of animal or vegetable substances, such as glue, gluten, resin, mucous, or any gummy
 &c.

substance in water is used, to which is added oxygenated oil or fat with or without resin. This mixture is applied to the material which, when dry, is passed through a strong solution of proto-sulphate of iron, which has been exposed to the atmosphere for three or four days. The basic red sulphate of iron, double sulphate of potassa, and alumina or hydrochlorate of ammonia, may be used instead of the proto-sulphate of iron. To make the material fire-proof as well as waterproof the solution of animal or vegetable substances, before described, is used mixed with hydrochlorate of ammonia dissolved in the serum, obtained from blood by the slow application of heat, together with crassamentum, obtained from blood by the same means, and graphite obtained by fusing iron filings with carbon. This mixture is applied to the material which, when dry, is passed through the solution of proto-sulphate of iron.

To impregnate oils and fatty substances with oxygenated gas, an apparatus is used consisting of "three cylinders which are placed inside each other when in working order, the second and "third or inner ones being perforated." The space between the second and third cylinder is charged with lead filings, alum, and marble in equal proportions. The oily or fatty substances are poured into the top of the apparatus and run into the spaces between the first and second cylinder. A tap on the top of the inner cylinder is then connected with a retort for producing oxygen gas, a continuous stream of which is kept passing through the oil or fat till it ceases to give any deposit.

[Printed, 1s. Drawings. See Mechanics' Magazine, vol. 57, p. 36.]

A.D. 1852, March 8.—N° 14,009.

PRELLER, CHARLES AUGUSTUS. — "Improvements in the preparation and preservation of skins, and animal and vegetable substances." The patentee states that his invention consists in impregnating skins, &c. with compositions of certain animal, vegetable, and saline substances by means of mechanical agitation, or by means of heat or warmth and mechanical agitation combined." The vegetable substances used are such as contain a large proportion of starch and little or no gluten, such as flour of barley, rice, potatoes, &c., or starch *itself*." The animal matters used are "ox brains, milk, butter, oil, tallow, fat, or other grease." The saline matters used are

salt and saltpetre. The process described is as follows:—To make the composition applicable to the skins, &c., ox brains and butter are mixed together, and barley flour is then to be kneaded in so as to form the whole into a stiff dough, to which milk, and afterwards oil, are added. The salt and saltpetre being intended to preserve the brains and butter from putrefaction may be added to either of them before they are mixed up as described.

In order to impregnate the skins, &c., they are, after being unhaired, steeped in water and partially dried, placed in a cylinder or apparatus which is kept slowly revolving so as to distribute the moisture equally. The skins are next laid out flat, and the composition is smeared over the flesh side of the skins, &c.; they are then again agitated in the revolving cylinder.

The patentee states that thin skins, such as lamb, sheep, &c., after being twice smeared over and agitated after each smearing in the cylinder for six or eight hours, will be sufficiently impregnated but that stouter skins, such as calf, seal, &c., will require to be treated for a few hours more in the apparatus, and that still stouter skins, such as horse, cow, ox, &c., will require a further smearing and agitation in the cylinder.

A stream of heated air is caused to pass through the cylinder while the skins are in it. This air should, it is stated, be at a temperature of about 75° Fahrenheit while the skins are being dried, at a temperature of from 85° to 100° after the first application of the composition, and at a temperature of from 100° to 120° after subsequent applications.

After each treatment in the cylinder, the skins are stretched on a table and worked with usual tools.

[Printed, 47. No Drawings. See *Mechanics' Magazine*, vol. 57, p. 267, also vol. 58, p. 253.]

A.D. 1862, July 6.—N° 14,199.

TANNER, WILLIAM. — "Improvements in dressing leather." The patentee states that his invention consists in "combining " the use of blubber with cod liver oil (in place of using that " oil alone)" in dressing leather. The blubber is to be heated in a vessel to 130° or 140° Fahrenheit, and the oil is then to be stirred in, so as to blend with the blubber.

The patentee states that in most cases equal quantities of oil and blubber may be combined, but that for thick leather a larger quantity of oil than of blubber should be used; also that the

mixture should be used at a temperature of from 70° to 80° Fahrenheit.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 21 (*enlarged series*), p. 106; Mechanics' Magazine, vol. 58, p. 55.]

A.D. 1852, September 30.—N° 14,311.

MORIDE, EDOUARD. — "Certain improvements in tanning." The patentee states his invention to consist in "the application of "an apparatus known under the name of "montejus" or ooze "cylinder (the shape of which may vary) for the preparation in "a cold state, and sheltered from the air, of the concentrated "oozes used for tanning." The ooze cylinder as described is a fixed cylinder, inside which near the bottom a diaphragm is placed. A pipe leads from the lower part of the cylinder beneath the diaphragm, and communicates by means of branch pipes with reservoirs for the oozes. A steam pipe supplied by a boiler enters the cylinder at the top.

The vegetable tanning substances are wetted, and then placed on the diaphragm and covered with cold water. Steam at a tension of two or three atmospheres is introduced into the ooze cylinder by steam pipe; this steam forces the water through the vegetable substances, and out of the cylinder by the pipe communicating with the reservoirs. The water in passing through the vegetable substances absorbs the tanning acid and soluble substances, and water is passed through three times in the manner described, after which the "organic substance is completely "exhausted."

[Printed, 6d. Drawing. See Mechanics' Magazine, vol. 58, p. 297.]

A.D. 1852, December 1.—N° 14,350.

LAMAILLE, PIERRE JULES.—"Certain improvements in the "preservation of japanned leather."

[No Specification enrolled.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 7.—N° 281.

PERKES, SAMUEL.—(*Provisional protection only.*)—"Certain improvements in the mode of treating skins, hides, leather, and other manufactured and raw productions." The patentee states that he employs "pumping, blowing, or centrifugal apparatus for the purpose of either cleansing, washing, preparing, drying, bleaching, or curing either skins, hides, leather, paper," or other substances, and that for this purpose he constructs "revolving machines with one or more arms or blades," upon which is placed the "material to be operated upon."

Secondly, that he constructs "a revolving machine with one or more blades or fans, and works it on one or both sides of the material to be operated upon," which is attached to "an internal or external frame."

Thirdly, that he uses "the above apparatus either vertically, horizontally, or at any required inclination."

Fourthly, that he constructs the blades or fans, and the frames of "ironwork, woodwork, wirework, perforated metals, horsehair work, or other suitable material, and either circular, radial, or otherwise." The patentee claims the use of these apparatuses singly or together, and further claims the use of guano "either in solution with certain liquids or substances, or otherwise," and the use of sulphur, in the manufacture and preparation of leather.

[Printed, 4d. No Drawings.]

A.D. 1852, October 19.—N° 439.

O'HYRNE, MARTIN WALTER, and DOWLING, JOHN.—"A machine for cutting paper, millboard, leather and other suitable materials for useful and ornamental purposes." In this machine the knife is fixed to a casting which moves horizontally back and forward in slides attached to the frame, by means of a crank

working on the fly wheel. The material to be cut is laid on a table and kept down to it by a screw and pressing piece. The table is attached to a sliding frame, and is adjusted to the knife by means of a rod with a screw on it passing through a screwed nut securely fastened at the back of the table. As the knife moves horizontally back and forward, the sliding frame with the table fixed to it has a vertical movement given to it, by means of which the material on the table is brought up to the knife. At the end of the driving shaft is a mitre wheel gearing into another mitre wheel at the end of a rod. At the other end of the rod is a worm taking into a worm wheel. The worm wheel is to give motion to an universal joint, "with a small pinion having a suitable number of teeth which works into an endless rack having also a suitable number of teeth." The pinion acting on the studs of the rack, raises the sliding frame and table. This rising motion continues until the teeth on the pinion come under the lowest stud of the rack, when the pinion continuing its rotatory motion is forced by the lowest stud along a slot to the other side of the studs. Then this pinion continuing to move in the same direction will force the studs downwards, together with the sliding frame and table. "This reversed motion secures the knife from injury, while the motive force is progressive in the same direction."

There is another form of the same machine in which the horizontal motion is imparted to the knife in the way previously described, but the slides in which the knife moves back and forward, are fixed on a sliding frame which is moved vertically up and down to a fixed table which carries the materials to be cut. This is effected by means of a pinion and endless rack working on the end of a lever, the other end of which supports a pin fixed on the sliding frame.

[Printed, 1s. Drawings.]

A.D. 1852, October 21.—N^o 473. (* *)

BERNARD, JULIAN.—"Improvements in the production of ornamental surfaces upon leather."

This invention "relates to an improved system or mode of making large dies for graining or ornamenting leather," such ornamentation being effected according to Letters Patent N^o 13,800 (*Old Law*) (which see).

In this former invention a die is formed "to give a fac-simile of the exact surface of an original skin of mammal leather by taking a cast of such skin by the electrolytic process." "In carrying out this invention it is found to be an object of importance to obtain dies of a larger size than one original skin," and the present invention, relating to the method pursued to obtain the required large die. For this purpose, "two or more portions of a skin are laid down and firmly secured to any convenient flat surface, such as polished slate. The junction edges of each separate portion of the skin are then depressed by a suitable tool so as to press those portions of the skin below the surface of the grain of the leather from which the die is to be made. The skin is now ready for the preparation of the die, and when the electrolytic process is used the deposit of the copper in the depressions or grooves will of course be thicker, and will stand up or be raised slightly above the surface of the rest of the plate. This extra thickness enables an engraver to cut away or engrave those portions of the die to correspond with the graining of the leather so as to present an uniform appearance of the grain over the whole surface of the die. It is obvious that by adopting this process enlarged dies of any kind may be produced with perfectly regular surfaces, although the surface of the pattern from which such dies are taken may be irregular."

(Printed, at No. 7, Newgate.)

A D 1892, December 14. N^o 1049.

MALINANT, Charles Emile. "Certain improvements in tanning." The invention described consists in the use of tannic acid of acetic acid for mashing, swelling, and tanning skins.

For upper leathers the process described is, after mashing by lime solutions and scraping, to soak them in a bath of melenase and water. It is stated that by this means great body and softness are obtained. For swelling out the same kind of skins they are first placed in a weak liquor to colour them and render them malleable; to this liquor bark and a small quantity of melenase and of acetic acid are added. The skins remain four or five days in the liquor, during which time the bark, tannic, and acetic acid are twice renewed.

For mashing thick skins the patentee states that according to his process the skins instead of being treated as is commonly

done, are put into a tub, and a solution of treacle and water is poured over them at a temperature of about 20°.* This liquor runs out through a hole in the bottom of the tub, is warmed again, and again poured over the skins. "The fermenting action which the treacle produces dilates the skins, opens the pores, and facilitates in a degree superior to all other means the coming off of the hair, which is obtained in twenty to twenty-four hours, sometimes in ten to twelve."

The patentee states that in order to swell out thick skins they are to be placed in a tub and soaked for twenty-four hours in liquor [tan liquor apparently] mixed with a large quantity of water. To this, is added after the preliminary soaking, tan liquor with a small quantity of treacle and acetous acid; the skins are subsequently placed successively in three tubs, each containing tan liquor, treacle, and acetous acid. The strength of the liquor increases with each tub.

For tanning, the patentee states that the bark powder is divided into three parts, one part being used for preparing the tan liquor, and the other for two powderings of the skins in the tan pits. The liquor is prepared in liquor pits with bark powder and a small quantity of treacle and acetous acid, and is passed from these pits to the tan pits, the liquor being frequently put back in the liquor pits to gain strength.

Dry skins may, it is stated, be treated by the patentee's process, after having been first fulled and soaked in a bath of fresh water containing a small quantity of acetous acid.

[Printed, 6d. No Drawings.]

A.D. 1852, December 22.—N° 1137.

AYCKBOURN, FREDERICK.—"Improvements in rendering certain materials impervious by air or water." The invention consists in preparing woven fabrics, &c., and leather with gutta-percha in the following manner. The cloth or leather is covered with a solution of india-rubber, or with chouca, marine glue, or other cement, on one side and then rolled on a cylinder. A sheet of gutta-percha, of suitable thickness, is rolled on another cylinder of the same diameter. "The two cylinders are then pressed in contact, & being set in motion the cloth will take up the gutta-

* The thermometer to be used is not mentioned, centigrade is probably meant.

"percha and turn an article airproof & waterproof, which as soon as dry will be ready for use." The gutta-percha may be applied to both sides, and any number of layers may be added.

(Printed, ed. No Drawings.)

1853.

A.D. 1853, January 6.—N° 36. (* *)

WHISKY, REPORT.—"Certain improvements in or upon the manufacture and treatment of leather, either alone or in combination with other materials;" and these are—first, "in the process of unhairing skins or hides" using "an hydrate of sulphuret of lime." Second, "in preparing the 'pelts' for tanning or curing," using "an alkali or acid, or both." Third, "in tanning, preserving, or curing them," using "an alkali with bark, sumac, terra japonica, myraludama, calania, or 'divi divi,' or the extract of any of the above, or tannin, or salt of metallic oxide, or an acid, alkali or neutral salt, either separately or in combination." Fourth, "for bleaching or coloring," using "the acetate or any other soluble salt of lead, or chloride of barium, or any other lustric salt dissolved with any suitable coloring principle, and afterwards immersed in or washed over with sulphate of soda or dilute acid." Fifth, "for filling the pores of tanned side or inside of leather as used for boots or shoes" using "prepared gutta percha, india rubber, gum, gum resin, oil, tallow, beeswax, gelatine, tar, pitch, resin in solution, cement, or paste, for the upper leather as used for boots and shoes using a partly saponified grease or 'cubbin,' rendered antiseptic by a salt or salts of metallic oxides or an acid." Sixth, "uniting, attaching, connecting, or annexing hides, skins, or 'pelts,' leather, leather shavings, splits, or pieces of leather, or for cutting them into strands, threads, or turn rounder by mechanical means, combined with linen, cotton, woollen, hemp, hair, jute wool, cork, grass, or sponge, or other fibrous material, or textile fabric, or steel or iron filings, or small metallic substances, or emery powdered, or wire, or metallic strips, or sheets, or india rubber, or gutta percha, or for a solution of gutta percha or india rubber, or a spirit of an acid or gum, or

“ gum resin, or oil, or gelatine, or for a solution, cement, or
 “ paste, or of any of the articles either separately or in combina-
 “ tion, &c.” “ and for a prepared gutta percha and leather sole
 “ that can be applied to boots and shoes, as an ordinary gutta
 “ percha sole.”

[Printed, 4d. No Drawings.]

A.D. 1853, January 29.—Nº 230.

CORRY, JOHN RYALL, and CORRY, JAMES BARRETT.—“ A
 “ new and improved method of dressing lamb-skin leather, and
 “ cleaning the wool therefrom.”

The first part of the invention consists in a method of dressing
 lamb skins.

The skins are soaked in water, dressed on the beam, and put
 into a solution of “ either of the following ingredients, namely,
 “ salt or salt prunella, saltpetre, nitrate of soda, or weak lime
 “ water.” They are next placed in a “ tainting stove,” and are
 afterwards either subjected to “ stiming,” or soaked in clear water.
 They are then worked up in a vessel “ containing either of the
 “ following alkaline solutions, namely, soda, potash, pearl-ash,
 “ barella, or other alkaline substance or matter, either separately
 “ or in combination, or with clear lime water, or lime added to the
 “ alkaline solution.” In the solution the skins are immersed several
 times, being at first drained out after each immersion, and being,
 before the last immersion, taken out of the solution and loosely
 shaken back into it, so as to open them. This is continued until
 the wool can be removed with a “ puller,” after which operation
 the skins are twice immersed in clean water. The grease and
 other superfluous matter are then removed with a “ striker,” and
 the skins are placed in clean water, and afterwards rinsed out in
 other water, after which they are placed in a weak solution of lime.
 They are next soaked in water, and afterwards worked in a
 tub containing a solution of “ muriatic or sulphuric acid, or
 “ any other suitable acid diluted to a strength sufficient to
 “ neutralize the lime in the skin.” The skins are then trodden
 in warm water, and afterwards in a weak solution of “ common
 “ salt, rock or bay salt, saltpetre, salt prunella, or nitrate of
 “ soda.” They are subsequently soaked in clean water.

The remainder of the process consists in working over the
skins on the grain side with a “ striker,” treading them in flour

or scalded hair, and then again working them over with a stick, after which the skins are fit to be converted into leather.

The second part of the invention consists in a method of cleaning the wool taken from the skins. The wool is well washed in water, drained, and then worked up in a vessel containing "a solution of sulphuric or other acid just strong enough to neutralise any alkaline or limey matter contained in the wool."

[Printed, &c. No Drawings.]

A.D. 1863, April 14. N° 914.

MEILLUM, FRANÇOIS MARIE ANTOINE. — (*A communication from Herman de Noek*). "Improvements in tanning."

The invention consists in "immersing the skins or hides after the hair is removed in a solution of minium catechu, and subjecting them to manipulation, then immersing them in a solution of vitriol, and finally in water. In heavy skins, after immersing them in a solution of minium catechu and manipulating," they are taken out and drained; a solution of water and alum is added to the minium solution, vitriol is added in, and the hides are re-immersed.

The patentee states that in place of alum a solution of sulphate of magnesia and minium catechu may be employed, but that alum makes the hides harder.

[Printed, &c. No Drawings.]

A.D. 1863, April 27. N° 1015.

JOHNSON, WILLIAM. (*A communication*). "Improvements in machinery or apparatus for marking, ruling, or ornamenting surfaces." This invention relates to a machine for ruling or marking paper, leather, or other substances. The whole arrangement rests upon a fixed table, which is fitted with two sets of parallel and grooved rails, one pair of which receives the machine for ruling the vertical or longitudinal lines; and the other pair carries a similar machine for ruling the transverse lines. Within the space enclosed by these four rails is a square raised table, upon which by means of a hinged frame is secured the paper or leather to be ruled or marked. The moveable carriage containing the pens, or, in the case of leather, the discs or markers is composed of a metal frame fitted on wheels running on the grooves of the rails. Beneath each series of markers is placed a hori-

" tannin material may be employed, but I prefer the valonia, and
" next to that divi divi.

The patentee also states that hemlock bark may be advantageously added to the tanning compound.

[Printed, 4d. No Drawings.]

A.D. 1854, February 15.—N° 362.

HOSSELL, JOHN.—" Improvements in machinery or apparatus
" for washing, scouring, and squeezing leather or other similar
" substances."

The patentee says :—" Instead of the usual method of washing,
" scouring, wringing, or squeezing the oil or other extraneous
" matter from leather or other similar substances, I propose to
" pass the goods to be cleansed into a cylinder or barrel (contain-
" ing any suitable solution) revolving on its axes, similar to a
" churn, with any number of flappers or washers affixed to the
" inner surface thereof, the said flappers or washers being for
" the purpose of thoroughly soaking & washing the skins or
" substances operated upon. The said skins or substances are
" then removed from the barrel or cylinder, and passed through
" or between two rollers supported on their axes in the ordinary
" manner, motion being communicated thereto by cog wheels,
" pinions, and pulleys, and worked by steam or other motive
" power."

By means of levers and adjusting screws, " a very powerful
" pressure can be exerted upon the material passing through or
" between the rollers."

[Printed, 10d. Drawings.]

A.D. 1854, February 22.—N° 427.

ASSANTI DAMIANO.—" A means of rendering porous sub-
" stances waterproof." This is effected by causing the substances
" to imbibe or absorb gutta percha." Gutta percha is dissolved
in sulphuret of carbon or other solvent, and the objects to be
made waterproof are plunged in the solution. "The gutta
" percha will thus enter into the pores of the substance, while
" the dissolving agent will evaporate, and leave the substance so
" treated waterproof, and at the same time more compact and
" more durable."

[Printed, 4d. No Drawings.]

A.D. 1854, March 22.—N° 670. (* *)

NEWTON, ALFRED VINCENY.—(*A communication.*)—"Improvements in japanning leather and other fabrics." These are "preparing leather for enduring a great degree of heat, and "toughening the fibre of the same," and in the varnish used, as follows: "Impregnating it with a solution of borax, nitrate of potash, japonic, or any equivalents for the same combined with sulphur, or any preparation of the same, or the sulphur may be applied as a gas in open or closed chambers." "The varnish ordinarily used in japanning leather is composed of oil, amber, Prussian blue, litharge, white lead, whet, whiting, asphalt, and sometimes gum copal." Now the improvement in the varnish consists "in combining with any preparation of these materials "india rubber, gutta percha, or any other elastic gum, rosin, tar, "and sulphur, or any preparation of the same."

(Printed, *ad.* No drawings.)

A.D. 1854, May 12.—N° 1002.

POTTER, MORRIS.—(*A communication.*)—"Improvements in machinery for splitting leather."

"The invention consists in the use of a knife composed of an endless belt of sheet iron or steel, in place of the knives heretofore employed in machines of this class."

"For this purpose there is a driving shaft from which the other moving parts of the machine derive their motion; two drums or carrying pulleys are fixed, one upon the driving shaft and the other upon a short transverse shaft at the other end of the machine. These drums carry the knife, which is composed of a strip of sheet metal, the ends of which are brazed, or otherwise suitably secured together, so as to form an endless belt. The upper portion of the knife is made to operate upon the leather in a manner which will be hereafter explained; it is confined between two jaws or guide plates, which hold the knife sufficiently rigidly to prevent it from being bent out of the horizontal plane in which its cutting edge is to operate." "An endless feed apron carried by rollers is used, and upon which the leather is fed to the knife. Motion is communicated to this apron in the following manner:—There is a screw upon the driving shaft which engages with a wheel upon the shaft of one of the rollers of the apron; the latter is thus made to revolve an amount equal to the pitch of the screw each time the

" shaft revolves ; as the knife travels a distance equal to the entire circumference of the drums each revolution of this same shaft, " it is evident that the velocity of the knife greatly exceeds that " with which the leather is fed into the machine." There is a roller on the upper surface of the leather regulated by screws and driven by a pulley and band. To present the leather equally to the knife by keeping it pressed against the under surface of the upper roller :—" There is a bar which lies immediately beneath the " feed apron and runs longitudinally through the machine ; there " is a spring plate secured to the bar above-mentioned and projecting beyond it beneath the upper roller ; this projecting " portion is slit into a number of equal portions which form as " many independent springs, by the action of which every portion " of the hide is kept uniformly pressed up against the upper " roller, whatever be the thickness or irregularity of the hide, a " uniformity of thickness being thus given to the ' grain ' which " cannot be otherwise obtained."

To avoid the necessity of removing the knife for sharpening and to keep the knife always sharp, there are " two revolving " stones or sharpeners which are arranged above and below the " the knife in such positions that they shall operate upon its edge " which is thereby kept continually sharp and in the best possible " condition for the performance of its work. It is evident that " if the constant action of these stones upon the knife be not " required to keep it sharp, that they may be used to operate at " intervals, and under certain circumstances stationary stones or " other sharpeners may be made to operate upon the knife in the " place of revolving ones."

The use of the revolving knife and the sharpening stones make it practicable to employ a sheet iron knife " instead of a steel " one heretofore rendered necessary ; the latter, however, may be " entirely dispensed with in this machine as the iron band has " been found to answer every purpose."

[Printed, 10d. Drawing.]

A.D. 1854, May 26.—N^o 1174.

SWEETSER, SAMUEL.—(*A communication from Warren A. Simonds.*)—" An improvement in preparing skins or hides for the " application of tannin thereto, or for being tanned."

This invention is thus described :—" In carrying out my invention I make use of soda ash in connection with the lime, and

" for preparing the alkaline vats sufficient for treating about three hundred goat skins, about fifty pounds of soda ash may be dissolved in about thirty wine gallons of hot water. When the solution has become complete, about fifty pounds of quick lime may be added, when the mixture should be well stirred and suffered to remain until it has become cold, when the whole may be added after or before it is poured into the vats, about five hundred and fifty gallons of soft or rain water."

"The skins or hides can be put into this liquor without the necessity of their being previously soaked, scraped, or broken, and milled or filled by the usual process."

"By permitting them to remain about three weeks in the compound alkaline solution they are ready to have their hair removed by the beamstomach, when the remainder of the process of tanning the skin preparatory to its immersion in the tan vat, or the tanning liquor thereof is the same as that usually employed by tanners." "By using the soda ash in combination with the lime, thereby producing a compound alkaline solution, I have found that there appears to be a specific action upon the skins such as swells or fills them to such an extent as to render the milking and beaming processes, generally required previous to their immersion in a solution of lime, almost if not wholly unnecessary."

[Printed, &c. No Drawings.]

A.D. 1854, June 6. N^o 1252. (* *)

ALBION, HOMERVILLE SCOTT.—"The manufacture of a new material to be used for external applications in medicine," consisting of "The skin of the lamb or other animal, deprived of wool or other fibrous matters, and prepared according to the process called alumina curing; then re-dressed, and afterwards rendered impermeable to air and water on one surface by the application of masticum or other similar adhesive matter, or simply perforated." "The lamb skin absorbs a large quantity of liquid, is very sensitive, and when wet becomes soft, pulpy, and adhesive, and a good conductor of heat." "The perforations admit of the escape of vapour, and consequently the heat of the part to which the application is made is reduced," &c.

[Printed, &c. No Drawings.]

A.D. 1854, August 8.—N° 1735.

TURNER, HENRY.—“Improvements in preparing hides and in cutting them into straps for driving machinery.” The “improvements in preparing hides consist in submitting them to the action of Irish moss and palm oil after they have been unhaired in the usual manner. The Irish moss is first boiled to convert it into gluten and then mixed with the palm oil: when the hides have been smeared over with these improved ingredients, they are submitted to the action of fulling stocks as is now customary.”

The “improvements in cutting hides into straps for driving machinery consist in cutting the hide in a spiral line,” which is effected in the following manner:—The hide is spread out and secured on a circular table which is supported by and swivels on a vertical spindle. To the centre of the table is fixed a change spur pinion gearing into a rack to which is attached the cutting instrument; the rack slides through “a guide frame supported in the centre of the table.” Motion is given to the table, and as the pinion “is connected to the table the rotary motion of the table imparts a traverse motion to the rack,” and to the cutting instrument. By these means the hide is cut into a long strap, which is “stretched into a straight line and pinned down until it is dry.”

[Printed, 6d. Drawing.]

A.D. 1854, September 29.—N° 2096.

JOHNSON, JOHN HENRY.—(*A communication from Paul Désiré Chaumont.*)—(*Provisional protection only.*)—“Improvements in machinery for removing the points from the hairs of rabbit and other skins employed in the manufacture of hats and similar articles.” “This invention relates to the cutting or plucking off of the hard points or extremities of the hair on rabbit or other skins, so as to leave merely the soft downy fur on the skin. This is effected by the aid of a series of nippers composed of bars or blades of metal, arranged to work in a frame by the action of a crank connecting rod. The skin or skins to be operated upon are carried on a drum underneath the nippers, and as it gasses along, the nippers lay hold of the extremity of the hairs and remove them. In order that the action shall

" be as nearly as possible analogous with the action of the thumb and forefinger, one of the nipping blades is grooved longitudinally at its nipping edge, and is covered with caoutchouc, whilst the other nipping blade is knife-edged or bevelled to fit into the grooves of the first one. By this means an elastic nipping action takes place as the caoutchouc gives way under the slight pressure of the opposite blade, and is pushed into the groove where the tips of the hairs are held firmly, and ultimately plucked off by a backward movement of the two blades combined; this last movement is allowed for by springs of caoutchouc attached to each side of the nipping bars and to the fixed portion of the framing."

[Printed, 4d. No Drawings.]

A.D. 1854, November 10.—N^o 2394.

RIMMEL, EUGENE.—(*A communication from Hippolyte Mayer.*)

—"Improvements in combining matters to be employed in coating fabrics and leather, and for other uses, in substitution of india-rubber." For this purpose alum and sulphate of iron are melted in rain or distilled water, and then soap (made of seal oil and potash by preference) is added. "The mixture is allowed to cool and is then worked well with pure water. The mixture is heated and evaporated briskly to a pasty state. Linseed oil, which has been boiled or thickened separately, whilst still hot, is mixed therewith, and then some raw or unboiled linseed oil is added. This when for coating fabrics or leather is to be first applied and then a second coating is to be used, of a compound of the above thinned with linseed oil." "This artificial india-rubber is applied on fabrics by means of an upright knife above a roller, on which the stuff passes tightly stretched. The number of layers varies from one to eight. Each layer is dried in a stove and pumiced over, before the next is applied. The leather may be stretched tightly on a wooden frame and varnished with a brush.

[Printed, 4d. No Drawings.]

A.D. 1854, November 16.—N^o 2426.

WILSON, ROBERT.—"A new or improved ornamental material or fabric." This new ornamental material consists of leather, woven or felted fabric, parchment, or vellum, which is prepared

on one side and made smooth by the use of oil or water colour, and is ruled with the designs called "clan tartan plaid or "chequered work" in the ordinary way in which such designs are produced on wood. The ornamental material or fabric thus produced may be applied to the ornamenting of snuff boxes, cigar cases, and other articles, and the ornamenting of the said articles is effected more economically by this invention than by the ordinary method."

[Printed, 4d. No Drawings.]

A.D. 1854, December 18.—N° 2668.

JOHNSON, JOHN HENRY.—(*A communication from Obadiah Rich.*)—"Improvements in extracting tannic acid from leather, and in preparing the leather for the manufacture of glue." "The object of this invention is to procure tannine or tannic acid from scraps or shavings of leather, and to prepare the leather for the manufacture of glue." The process used is the following:—The leather is cut into small pieces, washed and digested in a caustic alkali of ammonia, potash, or soda—soda being preferred of a specific gravity of about 1.025. After remaining in this solution until all the tannin has been extracted the leather is pressed to expel as much of the liquor as possible. "This liquor is now acidulated with sulphuric, muriatic, or acetic acid in order that the tannin may be set free and readily combine with gelatine when used for tanning new skins." Before making glue the skins must be subjected to a second solution of caustic soda, then washed in pure water and digested in dilute acid for twenty four hours. They are then immersed in a weak solution of carbonate of soda, after which they may be made into glue by the ordinary process.

It is also proposed "to apply the same principle for preparing and extracting tannic acid from the tannate of soda, the tannate of potass, or other tannates, and combining it with such substance as will render it suitable for transportation in a dry state, and fit for use in the oils of drying and tanning, or for other purposes. Tannic acid may be extracted from oak, hemlock, and other kinds of bark, nutgalls and other substances, by subjecting them to the action of caustic soda or other caustic alkalis until the alkali becomes neutral. To the tannate of soda thus formed, a sufficient quantity of chloride of calcium is added to

" combine with the tannin; by this process a double decomposition is effected; sulphide of carbon is formed in solution, while bismuth of lime is precipitated." This precipitate is washed and dried and is then fit for packing. To use the precipitate water must be acidulated with a suitable acid, when the proper quantity of bismuth of lime is added, the acid combines with the lime while the tannin is free in solution, and is ready for use. As the action of this solution on the gelatin of the skin is very rapid, heat, sunlight, or spent lark must be mixed with it.

(Patented 24 Nov. 1892.)

A. D. 1931, December 19. No. 2670

FAYRE, ALBERT FREDERICK JOSEPH. A new machine for " treating porous metals, applicable to leather and tanning." A small cylinder of a single section is fixed on the upper part of a frame. In its lower part is a steam box in which is a slide valve which allows the steam to enter or escape according to the pressure which is given to it. Attached to the piston rod which works in guides on the frame is a hammer lever carrying the hammer with which the work is done. The hammer lever carries an anti-friction roller which works on two slides with inclined faces. The slides are attached to a movable guide to which is fastened a rod communicating by a lever with the slide valve of the cylinder. When steam is admitted to the cylinder the rising of the piston raises the hammer until the anti-friction roller resting in contact with one of the slides causes the lever acting on the valve to allow the steam to escape and the hammer to fall. In its descent the anti-friction roller presses against the lower inclined slide which instantly reverses the movement, admitting the steam under the piston, and so alternately raising and lowering the hammer. Adjustments of course are also described by altering the position of the body supported on which are provided a pair of guide bearings.

(Printed by the Controller.)

A. D. 1931, December 30. No. 2687

ROUSELL, GEORGE FREDERICK. (*cf. rousellroffing*.) " Improvements in machinery for splitting leather." The patentee says: " In the machine most commonly in use for the purpose of splitting leather, the hide is pressed up to the surface

“ roll by a spring plate, over which it passes on its way to the
“ knife. The action of this plate is not however uniform, owing
“ to the varying thickness of the leather.

“ To keep the leather more uniformly and evenly pressed up to
“ the gauge roll, however variable may be its thickness, is the
“ object of the present invention, the first part of which consists
“ in the use of a roll composed of metallic sections or rings placed
“ beneath the gauge roll, and which performs the office intended
“ to be performed by the spring plate heretofore employed.” These
rings are strung upon a roll or shaft, and are of sufficient size to
have some play upon it, while they are carried round with the
roller by means of ribs upon it loosely fitting into grooves in the
inside of the rings. Underneath the rings and pressing against
them are a set of rollers strung on a spindle, one roller being
placed beneath each ring or one roller beneath every two rings.
The spindle holding the rollers is supported by springs so that
the rings are allowed to accommodate themselves to the varying
thicknesses of the leather.

“ The second part of the invention has reference to a peculiar
“ construction of feed apron, which carries the leather in between
“ the rolls and which is non-elastic and unyielding in the direction
“ of its length and elastic in the direction of its thickness.” This
is effected by making the apron of two thicknesses of canvas with
india-rubber or other elastic material between them, or of canvas
on one side and elastic material on the other.

[Printed, 10d. Drawings.]

1855.

A.D. 1855, January 3.—No 15.

LIPPMAN, ISAIE.—(*Provisional protection only*).—The invention
consists in improvements in splitting or tanning skins.

The skin is first fulled by a machine which “ possesses four
“ mallets or wooden fullers, which when set in motion each in
“ turn strike the skins in a slanting direction. The mallets are
“ set in motion by an axletree, and do not come into contact
“ with the edges of the trough, into which they work.

The skin is then (apparently) split by “ means of a saw, the action of which can be regulated at will, and which differs essentially from those usually made use of in the trade by its power of regulating, that is, increasing or decreasing the velocity of the cylinder which feeds the saw. The improvement has been obtained by a large wheel set in motion by a small Archimedian screw, by means whereof the movement of the cylinder which feeds the saw is considerably decreased and modified.”

[Printed, 4d. No Drawings.]

A.D. 1855, January 12.—N° 79.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication from Rene de Kercado Molac and Jean Daniel Friedel.*)—

The invention consists in the use of a peroxyd [otherwise called sesquioxyd] of iron, which is caused to form a stable compound with the gelatine of hides and skins. “ This stable compound is obtained by means of any chemical compound by which the gelatine of the leather is brought into the presence of a salt of peroxyd of iron capable of combining with it, and at the same time of an oxyd, which without decomposing the iron salt, shall absorb the acid as it is set free from the unstable combination of gelatine with the iron salt, those two ingredients producing finally a stable combination of gelatine and peroxyd of iron.

After stating that several iron salts and oxyds may be used, the patentee says :—“ Of all the chemical compounds and oxyds above alluded to, by which the desired effect may be produced, sulphate of peroxyd of iron and the peroxyd of iron itself will be found preferable on account of their simplicity and cheapness. In order to produce these two principal ingredients I use a solution of sulphate of iron, bioxy (*sic*) (otherwise peroxyd) of manganese, and sulphuric acid as shown on the right hand of the chemical equation below. These substances being employed in such proportions as to leave a portion of the oxyd of iron precipitated in the liquor, form the proper ingredients to be used as a tanning solution as shown on the left side of the following equation :—



“ To this liquor is added a certain quantity of pyrolignite of iron.

“ which acts as a tanning matter, like the sulphate of peroxyd of iron, and also gives to the leather a brownish colour whose intensity may be made to vary according to the quantity of pyrolignite employed.

With this liquor the hides are tanned first in vats and then in pits. When the hides are in vats a small quantity of fermented barley is added to the liquor, and hydrated oxyd of iron may also be added when the liquor gets exhausted or acidulated. When in the pits the hides are subjected to pressure taken off from time to time, and on being taken out of the pits they must be thoroughly washed.

[Printed, 4d. No Drawings.]

A.D. 1855, January 12.—N° 91.

GADOL, PETER NICHOLAS.—(*Provisional protection only.*)—The inventor, after stating that by his process leather is rendered “ softer and more pliable ” than by any other method, says :—“ I cause the skins or hides, having been exposed to the action of lime after the usual preliminary processes, to be treated with muriatic acid, by means of which the aforesaid lime is dissolved and rendered removable ; I then clear out the superabundant muriatic acid by treating the hides with soda, and I cause the said hides, when thoroughly purified and opened by the above processes, to be steeped in a mixture of common salt, potash, and molasses in any suitable proportions, by which process they will obtain the softness and pliability desired.

[Printed, 4d. No Drawings.]

A.D. 1855, January 30.—N° 231.

POCHIN, HENRY DAVIS.—“ Improvements in the treatment of certain compounds of alumina, and the application of the same in printing, dying, tawing, paper making, and such like purposes.” Clay composed of silica, alumina, iron, and water (the proportions preferred being 45 parts of silica, 37 of alumina, 3 of iron, 17·7 of water) is ground in an ordinary clay mill. It is then “ subjected for about two hours to the action of heat in a reverberatory furnace, during which time it is well stirred, until the whole of the water has been evaporated, and the powder brought into a condition to be easily acted upon by sulphuric acid.” One ton of this is intimately mixed with 21 cwts. of

sulphuric acid, having a specific gravity of about 1735, and the solution then reduced by the addition of water to the specific gravity of 1350. It is then placed in a leaden vessel and kept at a boiling temperature for four hours, and afterwards allowed to cool. The compound produced is called "aluminous cake, which" contains but little more than the silica originally in the clay, and "the sulphate of alumina formed by the action of the sulphuric acid, and contains no free sulphuric acid." The aluminous cake may be employed "in the preparation of white leather in the process called tawing."

[Printed, 4d. No Drawings.]

A.D. 1855, February 3.—N° 259. (* *)

LIPPMAN, ISAIE.—(*Provisional protection only.*)—"An improved method of dyeing or coloring the hides and skins of animals." "By this new method" "the skins are dyed or colored in the first instance, and afterwards tanned in the ordinary way; the process of dyeing being effected by the means employed in the coloring of vegetable substances, such as silk, cotton, &c."

[Printed, 4d. No Drawings.]

A.D. 1855, April 3.—N° 745.

CORNIDES, LOUIS. — This invention is of certain improvements in waterproofing leather and other fabrics. These consist in the use of new substances for the process, and also of an apparatus to recover the spirit or æther used with such substances as a solvent. The substances used are "a solution of explosive cotton in wood spirit, pyroxylic spirit, or alcoholized æther," combined "sometimes with india-rubber, gums, resins, bitumen, drying oils, fish oil colours, and tan with or without colours, graphite, or metallic or mineral powder in a dry state." A solution of caoutchouc or gutta percha in coal naphtha, or other known solvents, is also used. For some fabrics an apparatus is used in which the fabric after going through the solution is passed through a condenser. The superfluous evaporation from the æther or other solvent used is condensed, and the æther is recovered. The solution employed on leather is composed of coal naphtha, gutta percha, and resin. When dry the leather may have drying oils with or without colours, or fish oil colours, applied to

it by the following process:—Paper is coated with gum, and on the gum, when dry, the drying oils or other solutions to be applied to the leather are spread. When the coating is half dry, the paper is spread on the leather, and both together are passed under rollers. The paper is then wetted and gently drawn off.

[Printed, 10d. Drawings.]

A.D. 1855, April 5.—N^o 756.

SQUIRE, THOMAS.—(*A communication*).—"Improvements in "removing hairs from hides and skins." The invention consists in the use of the substance known as alkali waste. The patentee says:—

"I first of all obtain a liquor by allowing water to run through
"the soda waste, exposing it at the same time, in a large heap, to
"the action of atmospheric air; the liquid so obtained is collected
"in suitable tanks, and to it is added lime, or other alkali or
"alkaline earth, in the proportion of about twenty-eight pounds
"to every eight hundred gallons, but the quantity is not material."
The hides are steeped in this compound. The patentee further states that the liquid obtained from alkali waste will answer the purpose alone, and that the "lime or other alkali or alkaline earth" mentioned merely hastens "the completion of the process."

[Printed, 4d. No Drawings.]

A.D. 1855, May 9.—N^o 1043. (* *)

MARKINDALE, RICHARD SHIERS.—"An improved method of "removing wool from sheep skins and other peltry."

The patentee states, in the first place, that according to the ordinary mode of removing wool from sheep skins or other "peltry," the indiscriminate use of lime to all parts of the skins has been the cause of damage to the wool, which has also been deteriorated in quality by the "destruction of the natural oil or grease of the same," and that another evil attending the ordinary system is the great uncertainty as to the length of time for which the skins may require to be subjected to the action of the lime, "proceeding from various causes, such as atmospheric influence or rapid decomposition."

He then goes on to state that in the ordinary mode of treating the skins it is desirable that they should have acquired a slight

degree of "taint" before their removal from the "tainting" "staves," and that it is in "the novel and speedy accomplishment of this degree of 'taint'" that the advantages of this invention consist.

"This is effected by employing a suitably arranged chamber, to be heated by steam or any other appropriate medium of heat, wherein the skins are to be placed, the back of the skin being previously prepared by a paste or strong solution of lime or lime water. Steam now being admitted, and the temperature attained of about eighty to ninety degrees, the skins under operation become slightly decomposed, or receive a 'taint,' and in this state are fit to be removed from the machine or apparatus, when the wool may be readily stripped from the skins by hand without having received any injury by the process." The patentee states that a slight degree of practice will enable a person to determine the exact degree of heat necessary to produce the "taint," as well as the time to be occupied in the operation.

(Printed, 4d. No Drawings.)

A.D. 1856, May 12. - N° 1079.

THÉROULDES, FRANÇOIS ALPHONSE.—(*A communication.*)

"Improvements in preserving animal substances." This invention consists in preserving animal matters by treating them with chloride of aluminum, chloride of tin, persulphate of zinc, and the persalts of iron, manganese, antimony, and tin, either together or separate. And also in treating them with the chloride of sodium, potassium, or ammonium, mixed with the sulphate of iron, manganese, zinc, or antimony. For hides, a solution of any of the above substances or mixtures may be used. A solution of seventy-five parts chloride of sodium to one hundred of sulphate of zinc is preferred. In this the hide, when in a green state, is allowed to soak from six to twenty-four hours.

(Printed, 4d. No Drawings.)

A.D. 1855, June 2. - N° 1312.

LIPPMANN, ISAAC. - This invention consists in cutting or dividing the hides or skins of "oxen, calves, horse, and other large animals," in such a way that "the epidermis or grain itself of" such hides or skins may be divided. "The hides or skins are first submitted" to a preparing process whereby they are softened

“ so as to bring them to a proper state to be operated upon by the second machine.

The machine for effecting this softening “ consists of a chamber “ or chambers or troughs, in which are made to work two or more “ wooden beaters or fullers, which, when set in motion, each in “ turn strike the skins in a slanting direction. The beaters or “ fullers are set in motion by cranks or excentrics on the driving or working shaft, and are so arranged that they do not “ come into contact with the edges of the trough in which they “ work, but merely beat and rub the skins or hides up against “ the end of the trough or chamber and by that means soften “ the skins and render them quite supple.

“ The skins or hides having been thus prepared are then ready “ to be split or divided, for which purpose they are removed to “ the second machine, in which they are attached to a cylinder or “ roller, to which a slow rotary motion is communicated by “ suitable gearing. The hides or skins are split by means of a “ long vibrating knife or blade which is made to move with considerable velocity, as the roller or cylinder to which the skins “ are attached moves round slowly.” To effect this motion is given to the cylinder by means of an endless screw placed on a driving shaft and working into a cog wheel on the shaft of the cylinder. On the driving shaft is a large wheel which by a strap and pulley causes to revolve a shaft carrying an excentric and placed at right angles to the axis of the cylinder. The excentric by means of a connecting rod gives a rapid backward and forward motion to the knife.

The patentee states that by means of this combination of a quick vibratory motion of the knife with a slow rotary motion of the cylinder he is enabled to cut off “ the epidermis of the skin, “ and use the same for any purposes where a thin skin of leather “ is required, leaving the grain on the other part of the skin, “ which may be used for the purposes for which thick leather is “ usually employed.”

[Printed, 1s. 2d. Drawings.]

A.D. 1855, June 11.—N^o 1335. (* *)

LIPPMAN, ISAIE.—“ Improvements in dyeing or coloring the “ hides and skins of animals.” “ This invention consists, in the “ *first place*, in submitting the hides or skins to the process of

"dyeing before they are tanned. According to the plans now in use, the skins or hides are usually tanned first, and then dyed or colored afterwards. By reversing these processes, however, I have discovered that considerable advantages are obtained," cheaper and better materials may be used and the colour is more permanent. "The second improvement relates to a mode of dyeing the skins or hides so as to present a variegated or mottled appearance. This is effected by simply crumpling the skins up, and tightly securing them in this state while they are submitted to the action of the coloring matter in the dyeing vat." This may be repeated in different "colored dyes," and may be applied either "before or after the skins or hides have been tanned." The third, "relates to a method of dyeing or coloring skins or hides in such a manner that a metallic lustre may be given thereto." "The dye wood (or extract) which I have found most suitable for this purpose is logwood, but other dyes may be employed." "When the skins have been submitted for a suitable length of time to the operation of the dye, they are afterwards subjected to the action of chemical salts (by preference alkaline salts)."

[Printed, &c. No Drawings.]

A. D. 1855, July 21. — N° 1650.

FOURTH, ALBERT. — "A process for preserving and curing by salting the flesh and hides of animals in an entire state."

This object is effected by forcing into the veins and arteries of animals recently slaughtered a solution of saline substances. The means employed for injecting the veins, &c. are the same as those used "in anatomical schools to inject animal bodies."

[Printed, &c. No Drawings.]

A. D. 1855, August 4. N° 1771.

WILFEMAN, EDWARD. (*Provisional protection only*). — "An improvement in the manufacture of waterproof coats, hanks, capes, overalls, and other garments." This invention consists in the use of sheep or other skins with the wool or hair on in the manufacture of coats, &c. The woolly side is placed on the inside, and the flesh side of the skin is enameled.

[Printed, &c. No Drawings.]

A.D. 1855, August 23.—Nº 1906.

CLAUS, CHARLES.—“Improvements in removing hairs from “ hides and skins.” Four methods of producing depilatory agents are described :—The first is to “ flux carbonate of lime or caustic lime under exclusion of air or under a cover of small coal with “ sulphur.” The second is “ to flux pyrites, under exclusion “ of air or under a cover of slag, in a suitable furnace or in clay, “ brick, or iron retorts, with carbonate of lime or caustic lime.” The third is to “ reduce sulphate of lime or gypsum at a red heat “ with carbonaceous matters as coal or coke, &c., thus depriving its of its oxygen. The fourth is to pour hot water upon “ the “ refuse lime which has served for the purification of gas ” (apparently) and to keep the liquor hot by a steam pipe until the liquor has reached sufficient concentration. It is then run off and allowed to cool, after which it is fit for use. By these means the injurious “ products of the distillation of coals, such “ as creosote, empyreumatic oils, &c.,” present in the lime refuse are got rid of.

In order to use the three substances first mentioned they are submitted “ to a direct and repeated lixiviation with hot water or ” after being reduced to coarse powder are allowed to lie in large heaps, “ exposed on all sides to atmospheric air, whilst water in “ the shape of rain is kept running upon them.” A partial decomposition ensues, the products of which are washed out by the water. The liquors thus obtained are collected in tanks and form the unhairing solutions.

For fresh or salted hides where the preservation of the hair is required a paste made of one of the above solutions mixed with plaster of Paris is used. This is laid in a thin film on the flesh side of the hides which are then placed in small piles, flesh side to flesh side. After one or two days the hair comes off in good condition. The plaster of Paris is merely a vehicle for applying the solutions.

[Printed, 42. No Drawings.]

A.D. 1855, August 30.—Nº 1960. (* *)

STANSBURY, CHARLES FREDERICK.—(*A communication from M. H. Merrian and Joseph B. Crosby.*)—(*Provisional protection only.*)—“A machine for splitting leather and for analagous purposes.” It consists, first, “ of a disc cutter, having a simul-

" taneous rotary and reciprocating movement relative to the
 " machine in a plane at right angles to the axis of rotation ;"
 " second, " of an endless apron passing over an elevated bed and
 " rollers, combined with another roller having a greater surface
 " speed than that of the apron " for feeding the leather, india-
 " rubber, &c. to the above cutter ; third, obtaining an increased
 " feed or draft by having one of the surface rollers with " a greater
 " surface speed in some portions of it than others."

[Printed, &c. No Drawings.]

A.D. 1855, October 25.—N^o 2391. (* *)

RICHARD, JOHN ASHRAW.—" Improvements in producing
 " the 'hard grain' on leather."

" This invention consists in producing the hard grain on
 " leather, by passing it, when in a state to receive the hard grain,
 " under a roller made in the following manner:—A skin of
 " leather which has been hard-grained in the ordinary manner
 " is electrotyped," " and the plate thus obtained is bent round
 " and mounted on an axis, or, if it is preferred, the roller for
 " graining the leather may be cast from the electrotype plate."

" The manner of performing the invention is as follows:—The
 " already hard-grained leather " is held in an even and extended
 " state; the hardened surface thereof is then made conductive of
 " electricity by plumbago, and a deposited plate, by preference
 " of copper, is then obtained by the electrotype process."

" In place of obtaining the deposited metal coating on the
 " leather, a cast may be taken in plaster of paris or other suitable
 " material from the leather, and then a reverse by a second cast
 " of such material, which latter cast, being rendered conductive
 " of electricity, may be used to obtain the desired result. The
 " roller thus produced is used with a second or plain roller, and
 " the leather is hard-grained by passing the leather between the
 " pair of pressing rollers, which are mounted in suitable bear-
 " ings in like manner to those in which embossing rollers are
 " mounted."

[Printed, &c. No Drawings.]

A.D. 1855, October 27.—N^o 2405. (* *)

TOMLINSON, EDWIN, and JOB, ALFRED MORTIMER.—
 " Letters patent void for want of final Specification)—" Im-

“improvements in waterproofing skins of animals.”—It consists as follows :—The skins, first dressed, are placed in a close heated chamber, “in order to draw the greasy” matters they contain to the surface. Trays of sulphur and quicklime are placed in the bottom of the chamber, so that their “fumes” or “vapour” may rise and become “absorbents” of the greasy matters; or these “absorbents, in a dry or solvent state,” are applied to the surface. “When the skins have been freed from the oily or greasy matters they contained” they are coated with india-rubber, &c.

[Printed, 4d. No Drawings.]

A.D. 1855, December 8.—N° 2777.

DEVOS, FRANÇOIS.—(*Provisional protection only.*)—The invention consists of improvements in preparing and tanning hides, and is thus described by the inventor in his provisional specification :—

“If the skins are dry I first soak them in a lukewarm solution of chloride of sodium, of hydro-sulphuret of soda, of bicarbonate of soda, or carbonate of lime, but when the skins are fresh they do not require this preparation, but are placed at once upon the horse. The horse is a smooth surface upon which the skins are shaved with a tool somewhat resembling a plane.” “After being shaved the skins are coated with a composition composed of hydro-sulphuret of soda, hydrate of lime, pipeclay and water, at the end of an hour they clean with facility, and are cleaned upon the horse, washed, and the flesh removed; they are then placed into a bath of warm water containing phosphoric acid or phosphorous acid and nitric acid. It is in this bath they are softened. After being taken out they are squeezed, washed, and are ready for tanning. The phosphoric acid is only useful for skins of calfs, goats, sheep, &c.; for skins of oxen, cows, or other large skins it is replaced by a bath of sur-pyrolignite of lead in which the skins swell; after this operation they imbibe the tanning principles more easily. The skins prepared with sur-pyrolignite of lead should be subjected to numerous washings before being tanned.” “The skins are placed in the pits as usual, but the bark employed in the pits is replaced by ligneous matters, such as sawdust, chips of wood, spent tan, which I purify by boiling them four times, twice with boiling water, once with water containing bicarbonate of soda, and once with water containing sulphuric or hydrochloric acid.

" These pits are filled with classified tanning materials obtained by
 " an apparatus consisting of a tub of wood or metal communicat-
 " ing from the bottom by a tube and cock with a steam boiler,
 " and a second pipe and tap, also placed in the bottom of the
 " apparatus communicating with a reservoir of water. This
 " apparatus contains a false bottom, a lid loaded with weights and
 " several metallic clothes, the tanning materials are placed between
 " the false bottom and the lid, a metal tube, supported with a
 " screw placed with holes to float in the middle of the false bottom.
 " The steam pipe already mentioned is bent so as to be vertically
 " under the tube to which the screw is attached, the water contained
 " between the bottom and false bottom is heated by steam coming
 " from this pipe, and it is thrown into the opening of the tube
 " with the screw, and it is allowed to flow into upon the top of
 " the bark, and filter through the whole of the bark and return
 " into the bottom of the tub," the operation being repeated until
 a concentrated extract is produced.

(Printed by the Invention.)

A D 1866, December 31. No. 2002

MILK-FILTERING MACHINE FOR WATER. (Communication.) (For
 external protection only.) The invention, as described in the pre-
 vious specification, consists in improvements in the machinery
 for splitting butter.

The butter is fed upon an elastic feed
 upon a surface, and is forced to "pass" against the edge
 of a knife by feed rolls. The elastic feed upon referred to
 that for which the patentee obtained Letters Patent dated the
 25th December, 1864 No. 2017. The journals of the lower
 roll run in boxes, which slide in bearings attached to the sides
 of the frame; plates are suspended from the boxes by screws,
 which pass through holes in the plates and enter the bottom of
 the boxes; the plates and boxes are supported by springs, and
 thus, while the lower roll is forced up by the expansion of the
 springs, it can descend independently of the plates as the thick-
 ness of the butter increases, the distance to which it can
 descend being limited by the position of the plates, which is
 regulated by screws. There is a stationary knife which is
 secured to a screw bar attached to the housing. There is a
 spring roll which revolves in boxes upon axes, these axes
 revolve around a shaft, the boxes of which slide in

“ standards and are guaged by screws to regulate the distance of
 “ the roll from the knife. There are springs to keep the boxes in
 “ contact with the screws.”

To enter the hide between the feed rolls, the upper roll is swung out of position, being returned when the leather is placed. If the leather should “ bag ” behind the rolls whilst it is being propelled through the machine, “ the operator by placing his hand upon
 “ the ‘ bite roll,’ can draw that portion of the hide through and
 “ cause it again to run straight.” If desirable, the rolls can be stopped by unclutching the wheels, and the leather can be drawn through solely by the bite roll.

“ It sometimes occurs when the leather is carried through the
 “ machine by the rolls, that the ‘ grain ’ does not rise regularly and
 “ evenly over the knife, and is in consequence not left of uniform
 “ thickness ; this may be remedied by feeding the upper surface
 “ of the leather faster than the lower ; for this purpose the upper
 “ roll is made of larger diameter than the lower one, and it will
 “ be found that when the upper roll is of about one-fourth of an
 “ inch greater diameter than the lower one with the thickness of
 “ the apron added, the evil is entirely remedied.”

[Printed, *Ad.* No Drawings.]

A.D. 1855, December 29.—No 2951.

NEWTON, WILLIAM EDWARD—(*A communication from Charles Chrétien Knoderez.*)—“ An improved process of tanning.” The skins are placed “ in closed wooden vessels or cylinders, which
 “ are made to rotate on their axes. The vessels or cylinders
 “ may be made of any convenient size, according to the description of skins they are intended to contain. It has been found
 “ that for large skins, or hides such as ox, horse, bullock, or cow
 “ hides or skins, the vessels may be made about ten feet in
 “ diameter and length ; while for smaller skins, the vessels need
 “ not be larger than from six to seven feet long, and the same in
 “ diameter. The skins are placed in these cylinders, and an
 “ extract of tan bark is supplied thereto, a small quantity of bark
 “ being also added. When the skins have absorbed all the
 “ tanning principle, more tan juice and bark may be added, and
 “ after a few days the skins may be removed to another vessel,
 “ where they must be subjected to a still stronger extract of tan
 “ and a larger quantity of bark. By conducting the process on
 “ a rotative system, that is, putting the fresh skins into the

" weaker and partially spent or exhausted solutions or extracts, " all the tanning principle will be absorbed, and a considerable " economy over the old process will be effected. By the rotation " of the cylinders and the motion of the skins therein, the tan " bark will be reduced to a paste, and a certain amount of heat " will be generated by the friction of the skins against each " other, and the operation will be thereby facilitated. Extracts " of the bark are prepared of different degrees of strength, " according to the purposes for which they are to be employed, " and such extracts may be run from the tank or reservoir into " the tanning cylinders." The cylinders are hermetically sealed during the rotation. Motion is given to them by a revolving horizontal shaft turning some of the cylinders by bevil pinions working into bevil wheels upon the shafts of the vessels, and the other cylinders by straps and pulleys. The skins are felled in a felling cylinder before undergoing the tanning process.

[Printed, Ind. Drawing.]

1856,

A.D. 1856, January 12. - No 90.

HATFIELD, EMILIO CONSTANTIN PEREZ. -- " An improved " process of tanning." " The skin or hide is first freed from the " hair in the ordinary manner, and it is then cleansed from grease " by means of soap and water, or alcohol, or other solvent which " does not injure the fibres. A solution of bark, tannin, sumach " catechu, or other tanning material is then caused to filter or " soak through the skin by means of pressure or suction, pro- " duced by mechanical or physical means. This filtration is " continued from fourteen to forty-eight hours, or for a shorter " or longer time, according to the nature and thickness of the " skin. The quality of the leather is improved by employing " weak solutions, and continuing the action from two to fifteen " days. A solution of gelatine, or other matter capable of pre- " cipitating the tanning material, is then introduced by pressure " or suction. This solution and the tanning solution may be " introduced repeatedly and alternately. By these operations " the skin may be tanned in a very short time. The skin is

“ stretched during the process in a double frame, which confines
“ and clips the edges of the skin, which is sustained by a trellis
“ or open framework. This frame prevents the skin from being
“ forced out and torn away from its attachments by the pressure
“ of the liquid to which it is subjected. The skin thus held and
“ supported is made to form the partition between two vessels
“ or compartments. Into one compartment the soap and water
“ or other cleaning liquid is introduced by a pump or by a pipe
“ from an elevated cistern, and the liquid is thus forced to pass
“ through the skin into the other compartment. The pressure
“ may also be given by a piston, acted on by steam or by water or
“ other fluid, or by forming a partial vacuum in the other com-
“ partment. Several skins may be fixed in the same apparatus,
“ and traversed successively by the same solution, and several
“ apparatus may be arranged in stages so as to operate upon a
“ large number of skins at the same time. After acting upon the
“ skins in this manner for three or four hours, or more or less,
“ the cleansing liquid is drawn off, and water is introduced to
“ wash out the cleansing liquid. The water is then drawn off,
“ and the tanning solution is then introduced in a similar manner,
“ and its action is continued for a period varying from a few
“ hours to fifteen days, or more or less, according to the nature
“ and thickness of the skin and the strength of the solution
“ employed. A solution of gelatine, or other similar substance
“ capable of precipitating the tanning material in the interior or
“ pores of the skin, is then introduced in a similar manner. By
“ thus impregnating or nourishing the skin with gelatine, an
“ additional quantity of leather is formed or precipitated in the
“ pores of the skin, and the quality and density of the leather is
“ thus improved. The alternate filtration of the tanning liquid
“ and the solution of gelatine may be repeated several times, if
“ desired.” “The density or weight of the leather may be still
“ farther increased, if required, by impregnating it with a solution
“ of a salt of baryta, or a salt of lead, or other suitable metallic
“ salt, and with another salt capable of forming an insoluble
“ precipitate with the first salt. Thus the skin may be im-
“ pregnated successively with solutions of sulphate of soda and
“ chloride of barium which decompose each other and produce
“ an insoluble sulphate of baryta, and also a soluble sulphate
“ of soda ” which may be washed out.

[Printed, 8d. Drawing.]

A.D. 1856, January 30.—N° 250.

CLAUS, CHARLES FREDERICK.—“Improvements in the preparation of hides or skins, also applicable to the preparation of the entrails of animals.” The “invention consists in steeping or immersing the hides, skins, or the entrails of animals in a bath of glycerine, or any diluted solution thereof.” “The hides or skins being previously unhaired, cleaned, and fleshed in the ordinary manner, as adopted for tanning, are placed in a vessel or cistern containing a suitable quantity of glycerine, or a diluted solution thereof, required for their immersion, in which they are allowed to remain a sufficient length of time necessary to become perfectly impregnated or saturated, the time required for this purpose varying from one to four days according to the thickness of the hides or skins.” They are then dried for use. The hides or skins may be partially tanned before being placed in the bath, and when they are “to be stuffed, or preserved for ornamental purposes,” “a small quantity of alum, or a mixture of alum and salt, or arsenous acid may be added to the bath of glycerine,” if it be desirable. Skins which have been unhaired with lime, or other earthy substance, may be rendered flexible by placing them in a glycerine bath, and the lime can afterwards be precipitated by oxalic or diluted sulphuric acid, so that the glycerine may be used again.

[Printed, 4d. No Drawings.]

A.D. 1856, February 1.—N° 288.

BEAMISH, JOHN O'MEARA.—“An improvement in the manufacture of morocco leather.” The invention consists in a method of producing morocco leather from the hides of “oxen, cows, calves, horses, and other large animals.” The patentee says, “the hides or skins of large animals, such as those above mentioned, are in their natural state much too thick to be manufactured into morocco leather, I therefore propose to prepare them for such a purpose by paring or shaving away, either by hand or by mechanical means, the back or fleshy part of the hide or skin, so as to reduce it to the proper thickness for morocco leather; I am thereby enabled to obtain a very large skin of the proper substance, and then I treat this skin in a somewhat similar manner to that usually adopted with the

" ordinary skins, such as kid and goat skins, when manufacturing the same into morocco leather. By thus making a morocco skin from a thick hide or skin, by cutting away the fleshy part, I not only obtain a skin of larger dimensions than usual, and which can consequently be used more economically than a smaller skin, but I also obtain a skin of better quality than the ordinary skins, inasmuch as by paring or shaving away the back or fleshy part, the veins and blood vessels are removed therewith, whereas in smaller and thinner skins it is almost impracticable to remove these veins without injuring the skins."

[Printed, 4d. No Drawings.]

A.D. 1856, February 4.—N° 302.

WHITING, MATTHEW, junr.—(*Letters Patent void for want of Final Specification.*)—The patentee in his provisional specification states that his invention] "has for its object improvements in preparing for and in tanning hides and skins. For this purpose the hides and skins are suspended by cords, strings, or otherwise from the sides of a pit, so that their upper ends are below the liquor therein, and their lower ends are kept just above the bottom of the pit. Above the pit is suspended a frame, which descends into, and its lower end divides the pit transversely into two compartments, and it is free to be oscillated slowly to and fro therein. The hides or skins hang nearly or quite touching each other, and the oscillation of the frame presses alternately those on one side, and then those on the other."

[Printed, 4d. No Drawings.]

A.D. 1856, February 6.—N° 328.

FUNCKE, CHARLES FREDERICK PHILIPP.—"Improvements in tanning skins and hides." The patentee says:—

"First, I pass the unhaired skins or hides through water in which soda of commerce has been dissolved, and I then hang them up and allow them to become nearly dry, before I proceed to the actual tanning process."

"Secondly, I add diluted vegetable acids to extracts of bark or other vegetable substances containing tannic acid, and subject the skins or hides to the action of the combined liquid by steeping them therein, by which the pores of the skins or hides

" are opened and extended at the same time as they are exposed to the action of the tannic acid."

" Thirdly, I again subject the skins and hides to the action of a liquid, similar to the last, by steeping them therein, but in this case I take vegetable acid somewhat stronger than the former, and soften its action by the addition of a solution of sugar."

" And, finally, while the skins or hides are subjected to a well-known mechanical lifting and falling action, I subject them to the action of a liquid containing tannic acid, until the leather is finished; but as the tanning liquor in my process, in order to act with expedition, is of such strength as to give the liquor a color too deep for most purposes, I reduce this color, when required, by adding in this last stage of the process some sulphuric acid and salt to the tanning liquid in which the skins or hides are worked."

The skins are partly dried after each process before being submitted to the next.

[Printed, w/ No Drawings.]

A.D. 1866, February 19,--N^o 416.

(XXX, *Memorandum* *Verbal*.—"Improvements in the manufacture of leather, and in machinery for that purpose." The patentee says, "the invention relates to the mechanical processes of rubbing and scraping hides, skins, and leather. The various operations of depiling, scudding, striking, smoothing, slicking, and stretching are now usually effected by manual labour." "By my invention I perform these operations by means of machinery. The hide or skin, or piece of leather, is carried by a cylinder or roller, or by a moving bed or platform, which presents it gradually to a revolving spiral bar, rib, knife, or rubber. The spiral consists of a right and left-handed screw, so arranged as to rub or scrape the hide, skin, or leather from the centre towards the sides, or it may consist of a single thread of a screw, or of several threads, or of portions of several threads. The sectional form of the bar, rib, knife, or rubber may be varied. The roller or bed which carries the hide, skin, or leather is pressed towards the revolving spiral instrument by springs or otherwise, and is gradually advanced by a ratchet and eccentric, or otherwise, so that the whole of the hide, skin,

“ or leather is gradually and successively and uniformly exposed to the action of the revolving spiral instrument. A treadle is employed for withdrawing the roller or bed from the revolving spiral to facilitate the adjustment of the hide, skin, or leather.”

[Printed, 1s. Drawings.]

A.D. 1856, February 23.—N° 465.

WALSH, SAMUEL, and BRIERLEY, JOHN HENRY.—(*Provisional protection only.*)—“ Coloring and graining skins of leather on one side and japanning them on the other side.” The inventors in their provisional specification say :—“ Hitherto in the dressing or finishing of leather, one of skin of leather has been grained and stained, according to the required colour, another skin has been japanned in either fancy colours or black. The two skins or portions of them have then been cemented together, thus producing on one side a coloured or black japanned surface, and on the other a grained and stained surface.”

“ Our improvement consists in colouring and graining skins or portions of skins on one side, and japanning them on the other side, thus making one skin or portion of one skin answer the purpose to which two skins or portions of skins cemented together have hitherto been applied.”

[Printed, 4d. No Drawings.]

A.D. 1856, February 27.—N° 498.

LEGRAND, GABRIEL MARIE.—(*Provisional protection only.*)—The inventor in his provisional specification says :—“ My invention consists in the employment of wire gauze, in conjunction with strong pressure, for obtaining an imitation of morocco leather from the skins of goats and sheep, and from calf and other skins, so as to give them a striped grain.”

[Printed, 4d. No Drawings.]

A.D. 1856, April 19.—N° 942.

VARILLAT, WILLIAM JEAN JULES.—(*Provisional protection only.*)—“ Improvements in the apparatus for the extraction of colourings, tanning, and saccharine matters from vegetable

" substances." This invention consists of an apparatus formed by a number of cylinders communicating with each other by means of cocks placed at the top and bottom. The matter to be treated is held by trawls work in the middle of the cylinder, and the water passes from cylinder to cylinder, being let in alternately at the top or bottom, the last cylinder into which it flows being full of fresh matter. As the matter becomes exhausted greater heat is applied.

[Printed, w/ No Drawings.]

A. D. 1880, April 28. N° 1011.

HICK, William Henry. "An improvement in tanning hides and skins." "The hides and skins having been properly prepared as usual, are, in place of being submitted to the process of tanning heretofore practiced, to be placed in a closed vessel, from which the air is to be exhausted, the tanning liquor run in and subjected to pressure; a portion of the liquor is from time to time to be withdrawn, and fresh and stronger liquor is to be introduced." The liquor, which the petitioner prefers to use water, is subjected to pressure by means of a force pump, which forces as much liquor as possible into the vessel.

[Printed, w/ No Drawings.]

A. D. 1880, May 2. N° 1079.

HILL, ALEXANDER KENNEDY, and HILL, JAMES HENRY. (A communication from James Henry Kendall). "The improvements in tanning by machinery and chemicals." "The mode of treating the hides and skins described, consists in passing them more frequently through the tanning liquor than is usually done," or causing the tanning liquor and the hides or skins to move or circulate in the pit by means of a paddle wheel like drum erected over the pit, and which is caused to revolve or rotate by hand or other power. Over a pit, four feet six inches long and three feet wide, we place a drum with close ends, about three feet diameter, and of a length sufficient to work between the sides or in the width of the pit; the drum itself may be about seven inches in depth, and of the length of the drum, and by immersing the periphery of the drum, say about eight inches below the surface of the tanning liquor we find that on communicating a slow motion, say about twenty-four

“ revolutions per minute, the skins are kept in motion, being
 “ caused to rise from the false bottom of the pit on the one side
 “ to the top, and are then turned over and descend again to the
 “ bottom, where each skin in its turn again rises, and the entire
 “ number of the hides and skins are thus caused to circulate, and
 “ thereby become more readily acted upon by the tanning prin-
 “ ciple of the liquor or liquid in which they are immersed. In
 “ square bottomed pits we placed a curved false bottom of open
 “ lath work, of suitable size and form to suit the size of the pit
 “ and the diameter of the paddle-wheel like drum erected over it.
 “ We prefer to close each pit with a close fitting cover, which,
 “ being hinged, may be thrown back when fresh skins have to be
 “ put in, or those in process of tanning require to be removed.”

In the provisional specification the patentees claim “ the use of
 “ soda ash in connexion with lime and sulphate of potash for the
 “ purpose of unhairing, and the use of sulphate of potash in the
 “ tan liquor,” but no mention is made of this part of the inven-
 tion in the complete specification, the patentees stating there that
 they do not claim the use of any chemical ingredients for facilitating
 the absorption of the tannin in the tanning liquor.

[Printed, 8d. Drawing.]

A.D. 1856, May 10.—N^o 1110.

JOHNSON, JOHN HENRY.—(*A communication from Messieurs
 Arthus, Brothers.*)—(*Provisional protection only.*)—The inventor
 in his provisional specification says :—“ This invention relates to
 “ an artificial mode of drying varnished leather and dressed
 “ skins, whereby the old process of drying in the sun and open
 “ air which is found to be very slow and tedious is abolished, and
 “ the time employed therein greatly reduced. According to this
 “ invention the leather is placed in closed appartments or drying
 “ chambers, and is therein subjected to the action of continued
 “ currents of air, which is previously heated by any convenient
 “ arrangement of heating apparatus, and forced into the drying
 “ chamber by suitable blowing mechanism. The moist or damp
 “ air is constantly drawn off as fast as it is produced by a suitable
 “ exhausting or ventilating apparatus, so that the moist or damp
 “ air is continually being drawn off and renewed by fresh heated
 “ air.”

[Printed, 4d. No Drawings.]

A.D. 1856, May 13.—N° 1125.

PARKER, ALEXANDER.—(*Provisional protection only.*)—"An improvement in preparing materials for and in waterproofing " and coating woven and other fabrics, paper, leather, and other " substances." This improvement consists in applying a product or products obtained by distilling wood spirit and other naphthas with from one to two parts of chloride of lime, or with about one-fifth part of sulphuric, nitric, or other acid, in combination with gun cotton, and other vegetable matter similarly prepared, for making articles waterproof.

[Printed, 4d. No Drawings.]

A.D. 1856, May 26. N° 1263.

BAIRD, JAMES.- "A method of freeing the wool upon skins " from burrs and other extraneous substances." This "inven- " tion consists in the employment of revolving arms, beaters, or " switches made to act by manual or other power upon the face of " the wool while being held between rollers or other suitable " apparatus, in order to beat out burrs and other extraneous " matters." The driving shaft which works in bearings on the frame has keyed on one end a spur wheel which gears into pinions fixed on the shafts to which the beaters are attached. The beaters preferred are circular, and have prongs or prickers fixed on their periphery. The skins are stretched on a board with springs arranged so as to allow the board to yield if there is any uneven pressure on account of the inequalities in the skins, and are passed underneath the beaters until the burrs or other extraneous matters have been entirely removed.

[Printed, 6d. Drawing.]

A.D. 1856, June 10.—N° 1382.

WILSON, WILLIAM.—(*Partly a communication.*)—"Improve- " ments in machinery for pulling the hair from coney and other " skins." This machine consists of a drum fixed on an axle in the frame. On this drum the skins are fastened, and as it revolves they are brought under the action of the pulling apparatus which is fixed on the top of the frame and encircles the drum for more than one-third of its circumference. It is formed by a band of iron partially encircling the drum, to which are attached a number

of sectors united at the top by a similar bar of iron, and capable of an oscillating movement. To the under end of each sector a blade is attached, and at a little distance from these are similarly placed bands of iron covered with caoutchouc, or some elastic material. These covered bands are attached to other sectors fastened to the lower bar encircling the drum. "As the drum, with the skin attached, revolves, these knives, capable of moving backwards and forwards, take hold of the fur, and in their upward motion carry it to the covered bar, on meeting which they take off the long hair. To prevent these covered bars yielding to the pressure of the knives before taking off the hair, strong elastic rings are attached to them and to the frame of the machine as well as to the knives."

[Printed, *8d.* Drawing.]

A.D. 1856, June 27.—N° 1514.

PRELLER, CHARLES AUGUSTUS.—(*Partly a communication.*)—"Improvements in unhairing and preparing skins and in tanning." The patentee says:—"This invention consists in the employment of cod oil, horse grease, and other fatty or greasy substance in combination with lime and soda or other alkali, for the purpose of unhairing skins, and for preparing them for tawing or tanning, and in the employment of cod oil, horse grease, or other fatty or greasy substance in combination with soda or other alkali, and the usual materials containing tannic acid (such as oak bark, mimosa bark, terra japonica, cutch, divi divi, sumach, &c.) for the purpose of tanning. Warm water is employed for making the solutions and extracts of these materials, and the skins are agitated while immersed in the liquid, either in cylinders with projections or pegs on their inner surface, and kept rotating or in open vessels or pits, or by manual labor, or by any other suitable means. For the purpose of preparing the skins cod oil or other fatty substance is added to a solution of lime and water; and for tanning I use extracts of the materials containing tannic acid made with warm water and carbonate of soda and oil or grease. The lime required for the process is prepared by placing burnt carbonate of lime in lumps in an earthenware pan and sprinkling cold water on them "to produce hydrate of lime. "The compound of hydrate of lime with grease or oil and an addition of soda is more soluble"

than ordinary lime combined with the greasy matter of the skins, and can therefore be more easily washed out of the skins.

(Printed, *ad. No drawings.*)

A.D. 1856, August 15, — N° 1011.

SKINNIN, (JACQUES BENOIST. — (*Provisional protection only.*) —

"Certain improvements in tanning and finishing off leather,"
 "The inventor in his provisional specification says:— 'My improve-
 "ments in tanning consist in constructing a wheel of the required
 "diameter and breadth to suit the tan pit, which wheel I intend
 "to work in journals placed at the side of the pit, allowing about
 "one-third of the periphery of the wheel to be submerged, and
 "to suitable rails, which form the periphery of the wheel parallel
 "to its axis, I fasten on the skins intended to be tanned. The
 "wheel is then set in motion, and continues to revolve slowly
 "until the skins are thoroughly tanned, and it is evident that
 "the skins will be alternately submerged, thus producing a con-
 "tinued alternate dipping and draining action as well as agitating
 "the fluid. By this continuous and self-acting process the skins
 "may be tanned in considerably less time than heretofore; and
 "if a number of pits are required, the axis of the one wheel may
 "be extended from end to end, placing a wheel to work over
 "each pit."

"And the second part of my improvements consist and relate to
 "the finishing off of leather. 'This process has heretofore been
 "performed by laying the skin on a flat bed, and rolling it back-
 "ward and forward with a suitable roll. And my improvements
 "consist in securing a roller to the end of a strong arm, which
 "arm is carried up and also secured to a suitable axis, thus
 "forming a kind of pendulum action with a roller at the bottom,
 "underneath which I place a suitable bed, stretch from end to
 "end, in proportion to the radius or action of the roller. And
 "by moving and stretching the hide on the bed, it is evident
 "that the roller being pushed backward and forward from end to
 "end by hand, steam, water, or other power, that great uniformity
 "of thickness will be given to the skin, and to meet the variation
 "in the thickness of skins, and the difference of the pressure
 "required, I so adjust the bed that the operator may raise or
 "lower the bed at pleasure."

(Printed, *ad. No drawings.*)

A.D. 1856, August 16,—N° 1920.

HOFFMANN, PHILIPPE PIERRE.—“An improved compound “ to be used for waterproofing fabrics, paper, leather, or other “ materials.” This invention consists in the use and preparation of balm of sulphur for waterproofing purposes. The coatings to be applied to the material consist of balm of sulphur, either alone or mixed with siccativ oil, gum copal, gum opal, galipot, yellow amber, resin, litsphalt, india-rubber and gutta percha dissolved in essences of turpentine, naphtha, &c. The balm of sulphur is prepared as follows :—Siccative oil is boiled and allowed to settle before “decantation.” Ten parts of it by weight are then taken and slowly boiled, and during the boiling small quantities of flowers of sulphur are added. When from one to two parts of flowers of sulphur have been added, the balm appears a “homogeneous “ mass of brownish colour, cohesive and elastic somewhat like “ india-rubber.” A mixture of linseed oil with gum or resin, and a solution of india-rubber or gutta percha may be added. The fabric to be waterproofed is dipped into the composition when hot and liquid, and when withdrawn it is made to pass between scrapers which remove any excess of the material.

[Printed, 4d. No Drawings.]

A.D. 1856, August 18.—N° 1931.

CHOUILLOU, CHARLES MARIE.—“Certain improvements in “ thinning or shaving tawed, tanned, or dressed skins.” The patentee says :—“My invention consists in the employment of a “ tool, made to rotate and remove, by friction or cutting, any “ equalities or superfluous thickness that there may be on skins, “ this rotating tool being used instead of the to-and-fro action of “ a blade or cutting instrument worked by hand, and employed “ for thinning or shaving skins.”

“The tool which I employ may be of a parabolic form (which “ I prefer) or cylindrical or conical, or shaped like a grindstone “ or otherwise, being always so mounted that rotary motion may “ be communicated to it; and the tool may be made of natural or “ artificial stone, or of clay, pottery, pumice stone, flint, rock- “ crystal, quartz, emery, grit, schist, or other suitable material, “ or of metal, wood, gutta percha, leather having on the sur- “ face *grit*, *ground glass*, or other rough and rasping or grating

" material, and the outer surface of the tool may be roughened, serrated, furrowed, fluted, or corrugated, or the tool may consist of a roller or block provided with a number of parallel, straight, or curved or spiral blades, the edges of which may be smooth or serrated. The roller or tool, however formed, is mounted in bearings or on a spindle, so as to be capable of rotary motion, and being made to rotate by any suitable means; the skins to be shaved or thinned are brought in contact with it and stretched more or less, according to the thickness to be removed."

The same tools may be employed for fleshing skins, and for rendering them supple. A brush may be made to "act on the skin or the tool after the shaving for removing any loose particles."

[Printed, *ad. Drawing.*]

A.D. 1856, August 23.—N^o 1970.

STERLINGUE, ERIENNE.—"Improvements in preparing for tanning, and in tanning hides and skins." The patentee says:—"In preparing thick hides and skins, such as for strong sole leathers, after washing and cleansing the hides, as usual, I proceed to loosen the hair by steaming, but for this purpose, instead of suspending them in drying stoves or smoke houses, I steam them in my improved tan pits." "My improved tan pits are made of wood, strengthened with iron hoops, and are of conical shape," "being larger at the bottom than at the mouth." "The hides are stretched on circular wooden frames, which are lowered into the pit, being guided in their descent by ribs or guide plates formed on the inside of the pit." "The pit is then covered over, and steam admitted below through a perforated false bottom fitted in the pit. The temperature should be carefully regulated, for which purpose pipes or flues are carried from the bottom to the outside of the pit at different heights. The skins are subjected to the action of steam for ten to fifteen hours. The frames are then hoisted out of the pit, and the skins are ready to be unhaired and fleshed in the usual manner. The hide or skin is then stretched on the frame or on a table and smoothed by hand or otherwise." "Each hide or skin is then placed singly in a shallower frame, and rolled on to a layer or bed of bark, tannin, or tan straw thereon, and

" another bed of tan or bark is placed on the top, and the frame holding the hide and tan is lowered into the pit." " Other frames each containing a single hide between the two beds of tan may then be lowered, and when a sufficient number have been placed in the pit it is closed or covered over and steam admitted through the double bottom. The temperature of the pit is raised to say 60° Fahrenheit; the steam is then shut off, and ooze, tanning, liquor, or infusions of tannic acid (weighing about $\frac{1}{10}$ degrees of the alcohometer) are poured into the pit until it is full." " In about a fortnight the tanning liquors may be drawn off, the pit opened, and the hides or skins withdrawn."

The patentee further states that this operation is to be repeated a second time and may be repeated a third and a fourth time if needful, the steam being diffused slowly so as partially to condense by which the pores of the skin are opened and the doses of tannic acid being increased. In these operations deep frames are to be used, so that several hides may be laid in one frame.

The method described of treating soft skins, such as calf, &c., is first to unhair them in the ordinary way, then to smooth them by hand, and then to tan them in the manner above described. The method described for kid and other skins requiring to be grained is to wash them in the usual way, then to stir or handle them in a "weak bath of liquid," and then to tan them in the manner above described. The tanning of these it is stated will be effected in a fortnight.

[Printed, 8d. Drawing.]

A.D. 1856, August 25.—N° 1982.

WARRINER, GEORGE.—"Improvements in compounds for preserving, deodorizing, and fertilizing." This invention consists in the use of glycerine or sugar of fat or similar substances in combination with certain hydrogenous substances for preserving, &c. The process for hides is to place them in a mixture of glycerine water and salt, and allow them to remain in it some days before they are packed.

[Printed, 6d. No Drawings.]

A.D. 1856, September 3.—N° 2044.

CORNIDES, LOUIS.—"A new method of dressing or preparing *hides, skins, intestines, and such like animal substances.*" The

first part of the invention consists in a method of preparing hides "either as a new, firm, pliable, and semi-transparent material, or "as a substitute for leather." For this purpose the hides after being unhaired in the usual manner and cleansed, are steeped in a solution of glycerine, produced either by concentrating the solution known as "sweet liquor," or by any other known method, for a period varying from six to twenty-four hours. After this steeping the hides are withdrawn, well washed, and dried. Another method producing a substitute for leather is to tan the hides sufficiently to give them the superficial appearance of leather, and then to steep them as above-mentioned. When it is desired to make the hides more or less pliant and flexible, and to render "the materials employed perfectly insoluble in boiling water or "steam," they are steeped in "an ordinary solution of acetate "of alumina or salts of alumina. The concentration or strength "of the aforesaid alumina solutions, and the length of time "for steeping the hides or skins therein, depending upon the "thickness and the required degree of hardness and insolubility "of the same."

The second part of the invention consists in preserving hides with the hair on. This is effected by painting the hide on the flesh side with a mixture of concentrated glycerine and whitening, or ordinary pipe-clay. The whitewashing or pipeclay is afterwards brushed off.

The third part of the invention consists in a method of preparing animal substances, such as intestines, &c., which are steeped in "a solution of diluted glycerine or concentrated 'sweet liquor'" in the proportion "of about three parts of glycerine to one part "of water, and then dried."

In all the above-mentioned processes (apparently) for the purpose of giving a colour to the substances, a vegetable dye may be mixed with the glycerine.

[Printed, &c. No Drawings.]

A.D. 1856, October 8.—N° 2352.

WHITEHEAD, FRANCIS.—"A method of and apparatus for "producing devices in or on wood, leather, and other similar "surfaces, whether for ornamenting the same or for the production of printing and embossing surfaces therefrom."

The improved method consists in the use of an apparatus worked by hand, holding a tool heated by gas (or otherwise), for burning

patterns into blocks of wood, &c. The apparatus consists of a holder with a spindle, on the end of which the tool to be used is inserted and secured by a notched catch and springs. The holder is a ring through which the fore finger of the workman is inserted, and from it "the rest of the apparatus is suspended in such a manner that the tool may be rotated or moved about it by the remaining fingers and thumb. At the bottom of the apparatus the tool itself and the metal containing it is surrounded by one or more gas rings, jets, or burners, supplied through a flexible tube. The burners like the holder do not revolve." The sole of the frame through which the burners pass acts as a guard to prevent the tool penetrating too deeply into the wood.

One of the applications of the apparatus is its use in a pento-graph instrument, when the device would be produced without previous drawing or marking out on the block to be operated on. "One apparatus is employed without heat in place of the tracer, and a similarly constructed apparatus with heat applied in substitution for the pencil, an endless tape or other similar agent being used to secure simultaneous motions in both apparatuses." Another application, whereby curved and elongated lines may be produced, consists in mounting one of the apparatuses upon a swinging arm or lever, projecting from a fixed upright, and on which the apparatus is free to slide, the depression of the tool being effected by the rotation of an excentric bar or other suitable depressing agent."

[Printed, 10d. Drawing.]

A.D. 1856, October 31.—N° 2559.

DE CHAVANON, DIDIER ELIZABETH ERNEST AUSSET.—(*Provisional protection only.*)—"Improvements in cleaning all sorts of cloths, fabrics, and skins by the application of a substance called carburine." This invention consists in the use of a liquid composed of sulphuret of carbon and carbonate of sulphur for removing stains in cloth, &c.

[Printed, 4d. No Drawings.]

A.D. 1856, November 11.—N° 2657.

BERNARD, JULIAN.—"Improvements in the manufacture or production of boots and shoes, or coverings for the feet, and in

" the machinery or apparatus employed in such manufacture." These inventions relate to various improvements.

1st. An apparatus for holding a boot or shoe during the process of cutting or paring the edges of the sole and heel by hand labour, the principle of holding a boot or shoe in a holder or frame whilst being pared by machinery having been secured to the patentee by the patent of April 18th, 1854. The shoe is fixed between a block and pressing plate so adjusted that any desired side or edge of the sole or heel may be presented to the knife of the workman. The cutter employed "has two handles, and is " fitted with guards or fences in such manner as to prevent it " from accidentally cutting or injuring the upper leather."

2nd. An apparatus for ruffing or polishing the soles of boots and shoes, and for holding them during the process. The boot is fitted into a holder working on a slide, and free to turn laterally and longitudinally on studs or trunnions. The ruffing apparatus consists of a reciprocating slide or vibrating arm worked by an eccentric cam or crank and fitted with the requisite tool which is rubbed backwards and forwards over the sole.

3rd. This is a modification of the method of cutting out the soles of boots and shoes described by the patentee in the specification of an invention for which a patent was granted 29th March 1853. It consists in the employment of a hollow ram or piston " for raising the cutter which is placed upon it, such cutter being " of a corresponding size and shape to the article to be cut, and " is made hollow or open in the middle, the leather to be cut " being laid upon or under its cutting edge; the whole is then " elevated by means of cams or eccentrics acting upon the ram, " and the leather is cut out by being pressed against an overhead " cutting table, the piece or pieces of leather so cut being allowed " to drop through the opening in the cutter and into the hollow " ram." By another method the cutting table may be made to descend on to the cutter.

4th. This " relates to an improved cutting surface to be used in " cutting leather for boots and shoes, and consists of wood or " any fibrous material compressed in such a manner as to close " up and render the grain or fibres perfectly homogeneous."

5th. Consists in the use of an "inner sole composed of fibrous " materials, woven or felted, and combined with adhesive materials."

6th. In an improved form of last for boots and shoes.

7th. Relates to a mode of insuring the entrance of the piercers (belonging to the pegging machine described in a former specification) into the same holes it had previously made in the lasts. This is effected "by adjusting the sole in a holder, and then placing the boot or shoe over it, which boot or shoe is so guided by suitable projections inside the holder that it will always be presented to the piercing instrument in one particular or central position."

8th. Relates to "an improved mode of shaping the 'split lifts' used in making the heels of boots and shoes, and consists in piercing the strip of leather to form the split lift into the required shape between a pair of corrugated dies, the lower one having a raised edge round it corresponding to the required contour of the lift. The lift may be then removed and pressed between a pair of dies, which squeeze it."

9th. Relates to the application of the same method to "cramping" the heels and toes of boots and shoes. "The upper die is attached to a rod or slide, whilst the bottom die corresponds to the heel or toe of a boot or shoe which is placed upon a holding stud, the top die being actuated either by hand or by power." Another method of cramping the upper consists in the employment of a number of cramping levers working on one common shaft as a centre, and made to descend on the edges of the upper by means of cams, "whereupon they are all further pressed thereon by any convenient pressing apparatus."

10th. Relates "to a mode of splitting the lifts, which consists in passing a strip of leather between a fixed knife and a roller which roller is so shaped as to enable the strip to be cut diagonally across its thickness into two lifts."

[Printed, 1s. 4d. Drawings.]

A.D. 1856, November 13.—N^o 2679.

FRANCIS, WILLIAM, and HOOPER, JAMES. — (*Provisional protection only.*)—Improvements in tanning and dyeing leather, &c. "Hides, skins, and other substances to be tanned or dyed are to be placed in an exhausting vessel or chamber and the air exhausted therein; and after exhaustion the tanning or dyeing liquor is to be forced in by hydraulic or other pressure, whereby tanning and dyeing may be performed in an expeditious and complete manner."

[Printed, 4d. No Drawings.]

A.D. 1856, December 4.—N° 2879.

BARNARD, DANIEL, and LICHTENSTADT, DAVID.—(*Provisional protection only.*)—The inventors in their provisional specification say:—"This invention consists in the use and
" employment of certain ingredients, herein-after mentioned, as
" a substitute for the dog's dung now commonly used for the
" purpose of softening the hides or skins in the process of
" tanning. The ingredients proposed to be employed for the
" purposes of this invention are nitric acid, raw sugar, yeast, and
" water, in about the following proportions, namely:—Nitric
" acid, 1 part; raw sugar, 12 parts; yeast, 6 parts; and about
" half a gallon of water, which may be varied according to the
" required strength, the whole being well mixed and incorporated
" together. The hides or skins as they come from the lime are
" immersed in the above compound mixture, and allowed to
" remain a longer or shorter period, according to the degree of
" softness or pliability required. They are then removed and
" completed by the usual process of tanning."

[Printed, 4d. No Drawings.]

1857.

A.D. 1857, January 8.—N° 67.

HUGHES, EDWARD JOSEPH.—(*A communication.*)—This invention consists in the manufacture and application of compounds resembling gutta percha, leather, &c. These compounds are produced by combining fibrine, starch, gluten, or substances containing them, with gelatine, resins, gum, fats, oils, and substances containing tannin. A mixture of wheat flour, gutta percha, colophane, catechu and glue, or gelatine combined by the action of hot water or steam, will produce a compound which may be used as a substitute for leather. Or a compound may be made with soap as the bases. Tanned animal fibrine decomposed by high-pressure steam may be added, and for some purposes the compounds may be improved by exposing them to the action of

hydrogen sulphurous gas, sulphuretted hydrogen nitrous gas, or ammonia. The compounds may be dissolved and used for water-proofing purposes.

[Printed, 4d. No Drawings.]

A.D. 1857, January 17.—N^o 140.

PICHON, PRIX AUGUSTE THÉODORE.—(*Provisional protection only.*)—The inventor in his provisional specification states that his invention “consists in obtaining at once from the bark of the oak all the tannin and the gallic acid which it contains. There is placed into an alembic (for every gallon of water one pound weight of pulverized bark, and from which I obtain by distillation for every gallon of water and one pound of bark) about $\frac{3}{100}$ ths of a gallon of gallic acid. The distillation being finished, I take the bark and the water, and let them cool in a tub, the tannin being disengaged from the bark by the effect of the ebullition. I mix to this decoction the liquid which has been distilled, and I then put into a soaking tub about 220 gallons of it, so mixed, for every 40 or 50 calves’ skins, or 12 or 15 cows’ skins, or 8 or 10 hides.”

“The calves’ skins are soaked as usual, and the cows’ skins and hides are lifted as in the ordinary process.

“I lift the calves’ skins on bars every day for 4 days, and afterwards let them lay for 2 days, and lift them every 2 days until the bark is worn out, which takes place at the end of 10 days. At the expiration of that time the bark is taken from the tub, and the water is distilled with fresh bark, as before-mentioned, and the skins are again subject to two similar operations or tubs, which occupy 20 days (10 days for each operation). At the end of this time (30 days) dried calves’ skins of about 3 lbs. weight, with the hair thereon, are well tanned. If the calves’ skins are larger than the above-named, I subject them to a fourth operation or tub, or lay them in a pit to soak with the decoction for 20 days, after which they are perfectly tanned.”

Cows’ skins after three operations or tubs are placed in a pit, and are tanned in 40 days, and strong hides “after the above operations” are placed in a pit with two powders, and are tanned ix months.

[Printed, 4d. No Drawings.]

A.D. 1857, February 4.—N° 319.

HAMSHER, JAMES.—(*Letters Patent void for want of final Specification.*)—"Improvements in the manufacture of blacking for polishing, softening, and preserving boots and shoes, and other leathern articles." Ivory black, treacle, a mixture of gums, copperas, and vinegar are mixed together, and oil of vitriol then added. After the vitriol has exercised chemical action upon them and exhausted its caustic properties, rapeseed oil is added to the mixture. This mixture makes liquid or paste blacking. It may also be reduced to a powder for exportation.

[Printed, 4d. No Drawings.]

A.D. 1857, February 19.—N° 488.

CLAYTON, THOMAS.—"Improvements in machinery or apparatus for ornamenting and embossing wood, leather, paper, and other similar materials."

The object of this invention, which is an improvement of an invention for which Letters Patent were granted to the present patentee and Robert Harrop, dated 26th September 1854, N° 2070, "is to give ornamentation to inferior woods, papers, or similar articles." This is effected "by passing the inferior woods through or between heated rollers, the said rollers being engraved so as to represent the reverse or counterproof of the vein or design to be reproduced either sunk or in relief; they are hollow and raised to the desired temperature by the introduction of burning gas or other suitable means." As the wood passes between the rollers the requisite pressure is given to make the impression of the design on it.

[Printed, 1s. Drawings.]

A.D. 1857, March 12.—N° 718.

NEWTON, WILLIAM EDWARD.—(*A communication from Charles Chrétien Knoderer.*)—"Improvements in the process of and apparatus for tanning." The patentee states that:—"The first part of the invention consists in conducting the tanning operation in tanks or vessels from which air is exhausted and excluded, and to which vessels motion may be communicated when required, so as to submit the hides to a certain

“ amount of friction, which will create or develope heat, and thereby facilitate the tanning process. When the hides or skins have been prepared and made ready for the tanning operation, they are placed in a tank or vessel, and the air is pumped out therefrom. A communication is then opened between the tank or vessel containing the skins or hides, and another vessel containing the tanning liquor, which will immediately rush into the exhausted vessel and penetrate the skins. It is found advisable to completely fill the vessels, so as to entirely exclude the air, which would act prejudicially.” A fixed tank may be employed, but the motion and the heat developed thereby are found greatly to accelerate the process.

The patentee states that in a former patent the principle was to exclude the air from contact with the tanning liquor and the skins immersed therein (see ante Patent, No. 2951, A.D. 1855), but that the vessels (*i.e.*, apparently those made according to the previous patent) were not sufficiently closed to prevent the access of the air, and were never more than three parts full of liquor, so that they contained more air than was necessary for the decomposition of the tannin, and that as it seemed necessary, “ not only to prevent the contact of the air with the tanning liquor and hides contained therein, but also to extract from those latter any air which they might contain, the most effective plan for obtaining these results seemed to be to perform the tanning operation *in vacuo*.” The apparatus described for carrying out the invention consists of a large cylindrical vessel made of oak, and covered at the two ends with plates, on which are cast axles or trunnions mounted on bearings. These trunnions are hollow, and a pipe communicating with an air pump passes through one of them, the trunnion having a stuffing box surrounding the pipe to prevent the entry of the air.

The vessel is made of wood, in order to avoid the injuries to the colour of the leather produced by the use of metal for tanning vessels. In order to prevent the air from penetrating the wood, sheets of india-rubber are placed between the two ends of the vessel and the plates covering them, and the “outer surface of the staves of the vessel is covered with two layers of gutta percha, liquefied by means of light coal tar oil and linseed oil; this is applied hot by means of a brush, and caused to enter the pores of the wood by means of hot smoothing irons.”

There is an opening for putting in the skin fitted with a cover which can be screwed down.

The skin to be tanned are first steeped, and then submitted to strong pressure to squeeze out the water; they are next placed in the vessel with back and wetted; the cover is then screwed down, and the air exhausted. Tanning liquor is admitted through a pipe communicating with the pipe leading into the vessel through the hollow trunk. This communication can be opened or closed by means of a cock. When sufficient liquor has been admitted the cock is closed, and rotary motion is communicated to the vessel by a driving band and pulley, the vessel revolving on the hollow axis.

The patentee also describes an air-tight stationary tanning vessel constructed of wood, and communicating with an air pump. The top of this vessel is fitted with a cover which screws down. The air is exhausted by an air pump, and the hides are tanned in *vacuo*.

[Printed, *ad.* Drawing.]

A.D. 1867, March 16. N^o 742.

HUDOMAN, RICHARD ANTHONIO. - (*A communication.*) - (*Provisional protection only.*) "Improvements in apparatuses for splitting leather in order to manufacture tubes, sheaths, and other articles." "This machine consists" of a pair of cylinders "or rolls, through which the leather to be split is passed and presented to a knife working horizontally. This knife is mounted to a knife holder, hallow throughout its length. By means of a lever handle the holder is made to perform a to-and-fro motion in front of the rolls, moving upon a fixed centre. The free end of the holder thus describes a curve in front of the rolls. But in order to cause the knife to work in a line across and parallel with the rolls, it carries on the back end thereof, either directly or through a rod, a friction roller, which works in a curved channel fitted on a block behind the holder." "The play of the knife is effected by the lever handle before alluded to, through rods outside the holder, which rods are connected at one end through chains to the hinge, and at the other, also through chains, to a disc connected to the lever handle." "The knife can be adjusted so as to remove its splitting the skin accurately in the centre."

[Printed, *ad.* No Drawings.]

A.D. 1857, March 21.—N° 794.

LAFONE, HENRY.—(*Provisional protection only.*)—The inventor in his provisional specification says :—"This invention relates to
" a peculiar mode or modes of treating hides for the purpose of
" tanning the same, whereby a better result is obtained than has
" hitherto been effected, whilst a great economy of time and labour
" is accomplished. According to this invention the skins or hides
" to be tanned are first fleshed and unhaired, they are then
" placed in a strong vessel containing the tanning liquor, and
" are there subjected to a hydrostatic pressure of from three to
" four hundredweight per square inch, produced by a hydrostatic
" pump. This pressure is allowed to remain for some few hours,
" when the skins are passed through rolls, or subjected to pressure by other arrangements, in order to remove the watery particles. These two processes, namely, the subjection of the
" skins or hides to powerful hydrostatic pressure in the tanning liquor, and the subsequent passing of them between rollers or
" other pressing apparatus, are to be repeated until the hides are tanned."

[Printed, 4d. No Drawings.]

A.D. 1857, April 8.—N° 983.

LARNAUDÈS, JEAN FRANCOIS VICTOR.—This invention "for
" the disinfection and deodorization of animal and vegetable substances," consists in the production of a liquid by the mixture of the sulphates of zinc and copper with water in the following proportions. "Water, 935 parts; sulphate of zinc, 100 parts; sulphate of copper, 1½ parts (by weight)." The disinfectant thus prepared is of the strength of 116 degrees, but it may be concentrated either for the convenience of transport or other purposes.

[Printed, 4d. No Drawings.]

A.D. 1857, April 17.—N° 1090.

CAILLAUD, JEAN MARIE LEONIDAS.—"Improvements in
" removing the fur from the skins of rabbits, and in preparing
" rabbit, calf, and other skins for tanning." The patentee says :—"For the purpose of removing the fur from the skins of rabbits
" quicklime and red orpiment are mixed with water, and spread

" on the flesh side of the skins by a brush or other convenient means, by which the fur of the skins will become loosened in a shorter or longer time, according to the nature of such skins, and may then be readily removed. The skins of rabbits thus freed from the fur are then subjected to the action of lime in water, and having been cleansed from the lime, they, as also the skins of calves and other animals (unhaired in the usual manner) are subjected to the action of a solution of carbonate of potash to facilitate the removal of the fat. In some cases liquid ammonia is used to skins when they are hard or stiff. The skins are then subjected to the action of a solution of potash or soda alum, and when thus prepared are tanned by soaking in bark liquor, preferring to use only one strength, and to keep up the same strength of liquor till the skins are tanned, the skins being often taken out of and returned into the liquor."

[Printed, 4d. No Drawings.]

A.D. 1857, April 23, -N^o 1155.

ROCHETTE, ANDRÉ PROPRE.—"An improvement in currying leather." The patentee says:—"This invention has for its object an improvement in currying leather, and the invention consists in applying the greasy and oily matters obtained or separated from shoddy, in place of the tallow or oily matters usually employed by leather curriers." "In order to extract the greasy or oily matters from shoddy, the shoddy is put in bags, and these are placed in a screw or other press, the body of which is surrounded by a case, and when the press is charged steam is admitted to this case and the pressure is put on; the greasy or oily matter then flows from the press and the pressure is to be continued until it ceases so to do. In order to purify the greasy or oily matter I add to it about one and half per cent. of commercial sulphuric acid, and raise the mixture to its boiling temperature; afterwards I allow it to cool and settle, and then draw off the clear matter and again heat it with sulphuric acid, and allow it to cool and settle as before; the clear oil is then ready for use." The oily matter thus produced is mixed with tallow and used in the ordinary way.

[Printed 4d. No Drawings.]

A.D. 1857, April 29.—N° 1209.

BARTHOLOMEW, GEORGE.—(*Provisional protection only.*)—

“Improvements in tanners’ and curriers knives.”

“This invention relates to knives used by tanners and curriers in various processes of cutting or dressing hides and leather, and consists of certain arrangements by the aid of which such knives may be more effectually and economically used and worked than at present. Each knife is formed of two cutting blades set back to back a little distance apart in a clipping frame or metal holder. This clipping frame consists of two flat parallel plates of metal, welded or otherwise attached together at the ends, space being left between them to receive the two cutting edge pieces. When the cutting edge pieces are inserted in their places, the handle or body of the knife is made to clip them and hold them firmly for use by rivetting up a central row of taper rivets passed through both plates of the body or holder. These rivets are flush at each end with the surface of the body or holder, and when the cutting edges are worn down the rivets are easily knocked out and the cutting edge pieces removed. The cutting edge pieces are then placed in a similar way in a smaller sized holder or body, and there used until worn down for that holder; and this system of removal and refixing is carried on throughout the whole series of knives until the smallest knife is reached, when the cutting edge pieces are worn out.”

[Printed, 4d. No Drawings.]

A.D. 1857, June 24.—N° 1774.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Dollier, Frères.*)—(*Provisional protection only.*)—“An improved

“composition or polish for maintaining the brilliancy of varnished or patent leather.” “The composition consists of the following ingredients, in or about the proportions named:—

“187 parts of white or yellow wax.

“500 parts of essence of turpentine.

“62 parts of gum arabic.

“62 parts of ivory black.

" Various colours may be given to the composition, but the above substance will produce a black polish." The mixture should, by preference, be effected in a *bain-marie*. The water in the outer vessel being kept at 195° Fahrenheit, the wax and essence of turpentine are placed in the inner vessel and raised to 145° Fahrenheit. The gum arabic and ivory black are dissolved in some of the turpentine in a separate vessel, and then mixed with the wax and turpentine. The composition should be stirred, and when cool is ready for use. The composition may also be made without heat.

[Printed, 4d. No Drawings.]

A.D. 1857, July 28.—N° 2060.

BOBCEUF, PIERRE ALEXIS FRANCISSE.—" Improvements in preserving and otherwise treating animal and vegetable substances, and in the purification of oils employed therein, and which may be used for other purposes." This invention relates to preserving, hardening, and colouring animal substances, and also to preserving skins. For these purposes vegetable and mineral oils, oils containing saponifiable acid, oils capable of forming soluble salts in water and of acids derived by substitution obtained from saponifiable acids contained in essential, vegetable, or mineral oils," are used.

The invention also " includes the purification of essential, vegetable, and mineral oils containing saponifiable oils without distillation by separation." This invention, so far as it relates to leather, consists in the substitution of tri-nitro-phénic acid for tannic in the preparation of the skins of animals. One part of tri-nitro-phénic acid, mixed with alum, is dissolved in 50 parts of water, and this solution may be employed in the same way as tannic acid is ordinarily used. This mixture of alum and tri-nitro-phénic acid may also be used with solutions of tan. And " special kinds of leather may be prepared by means of phénic acid only, which being soluble in most of the various essential and fixed oils, may be mixed with them and diluted to any required extent."

[Printed, 6d. No Drawings.]

A.D. 1857, July 29.—N° 2066.

KENYON, HARTLEY.—(Provisional protection only.)—" Improvements in the treatment of certain compounds of silica.

"alumina, sodium, or potash, and the application of such compound in the processes of printing, dyeing, tanning, paper making, or in any other process in which the alumina of commerce is employed." Ordinary clays or spars are used, those being preferred which contain about 46.29 parts of silica, 40.09 of alumina, .27 peroxide of iron, .50 lime, 12.67 water in 100 parts. The clays or spars are dried and ground and then calcined or not, as preferred. Two parts of clay or spar, or both combined, are taken, and one part of marine salt, muriate of soda, or nitrate of soda, or nitrate of potash is added. One eighth part of Glauber salts or acid, sulphate of soda, or sulphate of potash in one and a half parts of boiling water, is added to the clay and salt. The whole is placed in a convenient furnace, and with it is mixed one part of concentrated sulphuric acid, 1.850 specific gravity. The hydrochloric acid, or aquafortis if nitrates are used, is driven off and collected. Or two parts of clay, one part of marine salt, or nitrate of soda or potash, and two and a half parts of sulphuric acid, 1.350 specific gravity may be used. There is no description of the manner in which the above compound is to be used.

[Printed, 4d. No Drawings.]

A.D. 1857, August 26.—N^o 2259.

SMITH, THOMAS. — (*Provisional protection only.*) — "Improve-
ments in machinery or apparatus for embossing woven fabrics,
paper, leather, and other materials." "Instead of having the
engraved roller which is used for embossing in one piece the
whole width of the machine, or the width of the goods to be
embossed, as now and hitherto adopted, I make a number of
small rollers of any convenient or required length, and by
means of a feather-edged shaft, screw, slot, or any convenient
method I can remove and secure the said small rollers to any
particular position on the shaft, as may be required for the
pattern to be embossed, thus avoiding the necessity of removing
a large roller from the machine and replacing it with another,
as may be required for the design."

[Printed, 4d. No Drawings.]

A.D. 1857, September 10.—N^o 2359.

HOUCHIN, RICHARD. — (*Provisional protection only.*) — "An
improved press for punching, stamping, and embossing, or
otherwise for cutting out paper, leather, or other materials,

" and for fixing and closing eyelids." "This machine consists of
 " a tripod or other stand, to which are attached suitable levers
 " or apparatus for giving motion to a plunger, which works in
 " suitable guides or bearings cast with or attached to the stand,
 " and which are afterwards accurately bored to fit the plunger.
 " To this plunger are fitted the necessary dies, cutters, or
 " punches required for use. Immediately underneath the plunger
 " is the seat or bed of the machine, upon which the materials to
 " be cuttomed or punched are placed, it being made perfectly
 " true with the plunger." "The machine is set in motion by
 " means of a treadle connected with the levers, and worked by
 " foot."

(Printed, 6d. No drawings.)

A. D. 1867, October 26. N° 2718.

MILLER, CHARLES. "This invention consists in 'pre-
 " paring a composition for uniting together materials of the
 " same or a different kind, such as iron to wood, leather to
 " leather, or leather to cloth." The composition is made as
 " follows: - Sulphuret of carbon, about one pint and three
 " quarters, guths percha about nine ounces. The sulphuret of
 " carbon and guths percha are placed together in a glass flask and
 " exposed to heat. The composition is applied by means of a
 " brush to the parts to be united. When dry they are heated by
 " a fire without flame. The two parts are then brought together,
 " hammered, and exposed to strong pressure. The composition
 " may be applied to the interior of trunks to make them water-
 " proof."

(Printed, 6d. No drawings.)

A. D. 1867, October 28. N° 2732. (* *)

MILLER, CHAS. A. M. A.—(Partly a communication).—(Provisional
 protection only.)

"This invention consists of subjecting bark and other matters
 " used for obtaining tanning liquor to a process of distillation,
 " for this purpose the bark (or other matter from which the tannin
 " properties are to be extracted) is placed with water in a still,
 " and a portion thereof distilled over, which will not be found to
 " contain gallic acid or tannin properties. The fluid and spirit
 " matter remaining in the still are to be withdrawn from the still

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“ and the liquid allowed to cool, when it will be fit for use, and it
 “ is employed mixed with tannin liquor prepared in the ordinary
 “ manner. The spent bark or material employed is used for fuel
 “ for heating the still and also for drying leather.”

[Printed, 4d. No Drawings.]

A.D. 1857, December 4.—N° 3006.

RIPLEY, ABRAHAM.—(*Provisional protection only.*)—“ Improve-
 “ ments in mills for grinding myrabolams, valonia, bark, and
 “ other similar substances.” A fluted roller or drum cast in
 segments of chilled iron or other hard substance, runs in plum-
 mer blocks resting on a suitable frame. Suspended from brackets,
 attached to the frame, is a semicircular breastplate, made of the
 same material as the drum, and also fluted, but with the flutes or
 teeth set the opposite way, so that when the drum is put in
 motion, the substances to be ground being fed from above will
 be torn or cut between the drum or fluted roller and the breast-
 plate. The distance of the breastplate from the roller can be
 adjusted by screws. By this machine hard acorns, myrabolams,
 valonia, bark and other hard substances used for tanning may be
 ground.

[Printed, 4d. No Drawings.]

A.D. 1857, December 14.—N° 3069.

OLDFIELD, JOHN.—(*Provisional protection only.*)—The inventor
 says:—“ This invention relates to a novel arrangement and com-
 “ bination of machinery or apparatus to be employed for separa-
 “ ting hair, &c. from skins or hides. The machinery consists of
 “ a metallic shaft mounted in a suitable framing, upon the
 “ periphery of which are formed a series of ribs or leaves having
 “ bevelled edges in the direction of the length of the shaft and
 “ parallel with each other. In a suitable position beneath this
 “ shaft a vertical blade or knife is placed to cut or separate the
 “ fur from the skin, which is distended across such blade between
 “ two pairs of rollers actuated by suitable gearing, one pair with
 “ plain surfaces to deliver the skin, and the second pair having
 “ fluted or otherwise roughened surfaces to draw the skin through
 “ the machine. When the skin is thus distended, the hairy side
 “ being next the knife, if the ribbed shaft be caused to rotate the

" skin will be continuously struck or beaten upon the edge of
 " the knife by each succeeding rib, and thus the fur or hair will
 " cut or separated from the skin, and as the shaft carrying the
 " ribs continues its revolution the rollers are so arranged that the
 " ribs may strike the skin beyond the knife, giving to it a slight
 " vibration, and thereby causing a fresh portion to be drawn
 " from the delivery rollers to be fed between the knife and
 " beaters and allowing the fluted rollers to take up the skin after
 " passing over a suitable guide; the fur or hair thus separated
 " falls on to an endless traversing band and is conveyed away."

(Printed, 4d. No Drawings.)

1858.

A.D. 1858, January 6.—N° 21. (* *)

JENNINON, HENRY CONSTANTIN.—"Improvements in the
 " production and application of tannin or tannic acid." These
 " are, "the production of tannin or tannic acid from bog peat, and
 " the application thereof to tanning purposes." Peat of the
 " greatest density, "commonly called deep black bog peat," is
 " selected, and is thoroughly dried by the air and reduced to a
 " coarse powder, and treated with a certain per-centage of nitric acid
 " (depending upon the nature of the peat) well distributed through
 " the mass. In a short time the mass becomes heated, and throws
 " off orange-coloured fumes in abundance," which are prevented
 " from escaping by covering up the vessel. After the subsidence of
 " the fumes water is added, about six to ten times as much water
 " as acid employed. When completely saturated more water is
 " added, and the whole brought to boil, and the boiling " continued
 " for four hours or even longer " to extract as much as possible
 " the tanning principle. The peat, before insoluble, has become
 " largely soluble. Peat fresh from the bog is first treated with sul-
 " phuric acid and steam from 180° to 212° F. for about two hours
 " before heating it with nitric acid, and proceeding as before. To
 " remove extractive or colouring matter a certain per-centage of
 " chloride of tin is added, and the whole boiled for a few minutes.
 " The liquor is then of a very pale color. Sulphate of alumina and

common salt also deposit color. The skins are first steeped in this liquid for many hours and drained, are steeped in a solution of carbonated alkali and again drained, are again introduced to the tanning liquor, and so on, "until the skins are completely tanned."

[Printed, 4d. No Drawings.]

A.D. 1858, February 6.—N° 223.

DAVIES, GEORGE.—(*A communication from C. M. G. Magneval.*)—"Improvements in the preservation of meat and other animal and also vegetable substances." This invention consists in the use of talc, whether crystallized lamellar, or otherwise, for the purpose of preserving "animal and vegetable substances by desiccation and the absorption of the causes of putrefaction. The talc may be used either in a dry powdered state, or made into a paste with salt and vinegar." "To preserve skins, and to prevent the putrid fermentation which usually soon takes place, it is only necessary to powder them on both sides with talc; but for those intended for tanning, it is better to make a thin paste with talc and water (previously salted), and spread it on both sides of the skin with a brush, laying the coating thinner on the hairy side of the skin." The skin is then hung up to dry.

[Printed, 4d. No Drawings.]

A.D. 1858, March 1.—N° 404.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—"Improved machinery for removing burrs and other extraneous substances from wool or skins."

This invention relates to a "machine for burring or cleaning wool in the pelts or skins, which is effected by clamping the said skins or belts between feeding rollers and presenting them thus held by the feed rollers to the action of a revolving cylinder armed with teeth and beaters so arranged and combined as to enable the teeth to comb or straighten out the fibre, whilst the beaters knock off the burrs and other extraneous matter." To prevent the pelt being drawn into or torn by the cleaning cylinder, it is held, fed, and controlled between a yielding and *n-yielding* surface. This is effected by holding and presenting

the skin to the action of the cleaning cylinder between a pair of grooved holding and non-grooved presenting rollers, one of each pair being elastic or yielding the other non-elastic or mounted in rigid bearings.

[Printed, led. Drawings.]

A.D. 1858, March 2.—N^o 410.

RIPLEY, ABRAHAM.—“Improvements in machinery for rolling and polishing leather and tanned or untanned hides.” The patentee says :—“Arranged between two benches or tables on which is placed the leather to be rolled, I fix a frame or bed which supports a cylinder laid horizontally, having a cover with proper glands and stuffing boxes at each end, and within which works a piston having a rod or rods passing through each of the said covers, the other extremities of which articulate into and are attached to a small chamber containing two rows of rollers, and which is itself firmly fixed to the weighted rolling box usually made use of for rolling and finishing leather; these two boxes are supported and roll on the tables and benches fore mentioned.” “The object attained by articulating the heads of the piston rods into the chamber attached to each box is to give the boxes a slight play vertically by allowing the rollers to rise on the cross piece attached to the extremity of the rods, which are at the same time kept in a straight position.

“The next part of the invention relates to the means for regulating the admission of the steam to the cylinder, and also the length of the stroke; this I effect by means of a rod passing from a vertical supporting rod attached to each extremity of the piston rods, and having upon it two tappets or studs which being moveable on the rod may be set to any distance apart, and by acting upon levers fixed upon the rod or the spindle of the slide valve reverse its motion. Instead of that method, however, I prefer to adopt the following :—Supported and fixed over the slide valve of the cylinder is a slide bed which should be at least three times the length of the cylinder; upon this bed are mounted four slides, the two outer or extreme ones are attached each to an upright rod which is fixed to the extremity of each of the piston rods just in front of the boxes. The other two inner slides have upon their upper surface a piece of

“ bar sloping upwards, also fixed on the same surface of these
 “ two slides, that is on each of them, is an eye or guide having a
 “ thread tapped in it, stretching between and having its extre-
 “ mities resting in two eyes or seats; in the extreme slides is a
 “ rod having on a portion of its surface near each end a right
 “ and left handed screw, corresponding to the thread in the eye
 “ or guide on the inner slides, and working in them, so that upon
 “ causing the said rod to rotate by means of a small wheel on
 “ each end, the inner slides with their prongs can be made to
 “ approach and recede from each other. It will be seen that
 “ when the piston is in motion the two outer slides being con-
 “ nected with it will move backwards and forwards on the bed,
 “ and carry with them the rod which in its turn carries the two
 “ inner slides with the projecting prongs which press each as
 “ they approach on a lever fixed on each extremity of the spindle
 “ of the slide valve, and thus reverse its motion by admitting the
 “ steam on the other side of the piston.”

[Printed, &c. Drawing.]

A.D. 1858, March 12.—N^o 505.

WRIGHT, JAMES.—(*A communication.*)—(*Provisional protection only.*) — “Improvements in the mode of treating tanned and
 “ untanned hides and leather.” The inventor in his provisional
 “ specification says: — “In treating untanned hides in order to
 “ effect the process of tanning more completely and speedily, I
 “ propose first, to subject the hides to the action of some
 “ substance which will as much as possible dissolve the gelatine
 “ or glutinous matter within the pores. I then subject the hide
 “ to the action of a powerful exhaustor, so as to withdraw the
 “ air and liquids out of the pores and distend them when in
 “ this state. I introduce the tanning matter, and subject the
 “ whole to the action of a powerful compressing pump or
 “ machine, so as to force the liquid within the pores of the
 “ hide, which more perfectly and speedily completes the process
 “ of tanning. In order to increase the imbibing surface of
 “ the hide, I pass it between rollers or under a roller whose
 “ surface is studded with small prickers, similar to the barrel
 “ of an organ; I then treat it as before mentioned; I propose
 “ also to treat tanned hides and leather in a similar manner,
 “ that is, by passing them under rollers as before described; I
 “ then moisten it so as to distend the punctures so made, and

“ subject it to the action of the exhauster, and force by means of pressure, as before described, liquid india-rubber, or gutta percha, or a compound of both, or any other gummy or resinous matter which is insoluble in water, in order to render the hide or leather (whether the former be tanned or not) waterproof.”

[Printed, 4d. No Drawings.]

A.D. 1858, March 15.—N° 524.

TAYLOR, WILLIAM. GARNETT.—(*Provisional protection only.*)
—“Improvements in preparing skins for tanning. The inventor in his provisional specification says:—“My invention has for its object the removal of the fur more particularly from hare, rabbit, and other similar skins by mechanical means preparatory to such skins being tanned into leather. Heretofore, when skins of this kind were required to be tanned, the fur was removed by chemical agents, such as lime, potash, and soda, but which are all found to be injurious, either to the fur or pelts; whereas by the mechanical means which I propose to employ to remove the fur and prepare the skin for tanning, the fur as well as the pelts will be preserved from injury. The mechanical means I propose to employ for removing the fur from the skins are knives, so arranged as to act on the surface or cylindrically to remove the fur close to the pelt, the skin being adjusted so as to come in continuous contact with the edges of the knives.”

[Printed, 4d. No Drawings.]

A.D. 1858, March 31.—N° 686.

MERCER, JAMES.—“Improvements in the manufacture of leather.” The invention consists in effecting the “scouring” and “stuffing” of leather by the use of a revolving drum mounted on a frame. Inside the drum are a fixed a series of pegs. The hides after having been shaved are placed in the drum with warm water and soap, or other softening or cleansing ingredients.” The drum is then set in motion which “has the effect of destroying the “bloom” of tanning and the hides or pelts after this process are easily cleansed by any of the known methods. After scouring they are subjected to the process of ‘retanning’ by sumac, terra japonica, or other tanning material; and when tanned enough are again scoured out and dried.”

The subsequent process of "stuffing" of the hides is effected in the following manner:—The temperature inside the drum is raised by the introduction of steam or by other means. The temperature is then allowed to fall, the steam, if used, being allowed to escape, and the hides are then put in the drum. The "stuffing" or "composition" heated to a higher temperature than the atmosphere in the drum is poured in, and the drum is caused to revolve. "After a sufficient time has been allowed the hides or pelts to absorb all the "stuffing" they are taken out and set on a table the same as "setting" before "stuffing" in the usual method. They are now hung up to dry, after which they are ready for finishing."

[Printed, 8d. Drawing.]

A.D. 1858, April 7.—N° 744.

WRIGHT, JAMES.—(*A communication*).—(*Provisional protection only*).—"Improvements in the mode of treating leather, in order to render it waterproof." The inventor says:—"I propose to split the hides or skins of leather into two or more pieces. I then coat one of the surfaces of the split portions (preferably the split surface) with india-rubber or gutta percha, or with a compound of both of these, or with a solution of shellac or of any of the gums which are insoluble in water. The two surfaces coated with such are then put together, and subjected to great pressure, so that afterwards they form once piece quite impervious to water or damp. Two or more of these compressed sheets may be put together, and treated in the same manner as a single pair. Moreover, when the skins are thin as some sheep skins for instance, it may then be unnecessary to split them, the two skins being treated similarly to two split pieces. The leather so prepared may be rolled in the usual way to form the surface even when requisite."

[Printed, 4d. No Drawings.]

A.D. 1858, April 15.—N° 818.

MEYERS, JOHN.—"Improvements in the treatment of dark fur skins, in order to render them more highly ornamental." This invention consists in "treating dark colored fur skins, so as to give them a variegated appearance, and render them more highly ornamental by inserting within or upon such said

" skins, small spots or patches, or tufts or tails of white or light-colored fur, fur skins, feathers, down, or such like similar material."

This is effected by gumming, stitching, or sewing the light-colored spots into the dark fur.

[Printed, &c. No Drawings.]

A.D. 1858, April 17.—N° 885.

LUTKREAU, APOLEON ANTOINE.—This invention consists of a machine whereby pieces of leather, paper hangings, and other materials can be polished or glazed in several parts leaving other parts unpolished. The machine consists of two rollers, between which the piece passes. The larger roller is of massive cast iron with the proposed drawing in relief upon it, the parts which are to be left unglazed being hollowed out. The smaller roller is of hollow cast iron and is used heated; as it revolves a great deal quicker than the large roller it "slides on the piece, and by means of a certain heat and heavy pressure given to the substance acted upon a bright gloss. The hollow parts of the roller not transmitting any pressure to the material, allow it to remain in its natural state, but the pressure of the parts in relief combined with the heat and friction gives the desired gloss."

[Printed, &c. Drawings.]

A.D. 1858, April 27.—N° 936.

KILLICK, WASHINGTON.—"Improvements in apparatus for cutting, reducing, or dividing vegetable, animal, and other substances." The apparatus which is suitable for cutting leather, though meant primarily for cutting vegetable materials into narrow pieces of uniform length, "consists of a pair of steel rollers made into deep grooves or indentations. These rollers are arranged one above the other, the annular projections of one roller being opposite to the grooves or indentations of the other. In this manner the sharp angular edges of the annular projections divide the material as it is passed between them in a manner similar to the cutting action of a pair of scissers. The rollers have fast to each of their spindles a toothed wheel one of which is put in motion by means of a handle secured to the end of a spindle. The material to be cut is prevented

“ from lodging in the interstices of the cutting wheels by serrated
 “ pieces of metal, the teeth of which are directed towards the
 “ grooves of the wheels. It is preferred to have two of these
 “ comb-like clearers, one for the upper roller and one for the
 “ lower one, and they are fixed across the apparatus just above
 “ and below the line where the cutting action takes place. The
 “ severed material is carried away from the cutting rollers by a
 “ pair of plain rollers, which are arranged parallel to the first
 “ pair. These rollers are driven by an intermediate wheel, which
 “ is in gear with one of the toothed wheels on the cutting rollers ;
 “ the plain surfaces of these rollers press upon and grip the
 “ severed material, carrying it away from the cutting rollers, and
 “ out of the machine as fast as it is divided. If the material or
 “ substance is required to be cut transversely, a cutter is fixed
 “ longitudinally in one of the cutting rollers, this cutter divides
 “ the substance into pieces of corresponding length.”

[Printed, 8d. Drawings.]

A.D. 1858, April 27.—N° 937.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—“ Im-
 “ provements in machinery for splitting leather or skins.” The
 “ invention is as follows :—“ The leather or skin to be split or
 “ divided is wound upon a shaft or roller to which is adapted a
 “ break, whereby the motion of the shaft or roller, and consequently
 “ the feed or supply of the leather or skin to the cutting instru-
 “ ment is regulated. The cutting instrument consists of an
 “ endless band of metal having a sharp cutting edge; this band
 “ passes round and is driven by pullies,” driven by toothed gear-
 “ ing. “ In order to ensure the accurate operation of the cutting
 “ instrument, it is made to travel in a horizontal guide, extending
 “ the whole width of the skin or leather to be operated upon.
 “ The guide is provided also ” with a back plate adjustable by
 “ screws against which back plate the cutting band bears, and is
 “ supported so as to resist the pressure of the advancing skin or
 “ leather. The cutting band is also further supported at other
 “ parts of its course by grooved pullies or wheels, which receive
 “ the forward edge and prevent it from riding forward.” In
 “ order that these wheels may not injure the cutting edge of the
 “ knife they have a dovetailed groove round their periphery, and in
 “ order that this groove may not blunt the knife, it is of a width “ at

" the extreme circumference just sufficient to admit the edge of
 " the knife, but not as wide as the knife plate itself." " In order
 " to hold the skin or leather firmly, it is passed between holding
 " rolls, the upper one of which " *i.e.* the gauge roll " is of small
 " diameter, and is supported from above by another roller, which
 " prevents it from yielding to the upward pressure of the leather
 " or skin beneath. The skin or leather is supported beneath by
 " another roller which is divided into rings or sections strung
 " loosely upon a shaft of somewhat smaller diameter than the
 " internal diameter of the rings. By this means the rings are
 " capable of moving separately in a vertical direction on their
 " shaft," forward and backward motion being prevented by a
 " front plate and a bar placed behind the rings; they are
 " also prevented from moving upwards beyond a certain point by
 " the front plate. " Beneath the sectional ring roll is an elastic
 " roll of india-rubber," " which serves to force up the sectional
 " rings to accord with the varying thickness of the leather." It is found when the india-rubber roll is placed immediately
 " underneath the sectional roll that the sections " embed themselves
 " in the elastic roll " and then " snap back with force." To
 " remedy this the elastic roll is placed a little on one side of the
 " axis of the sectional roll instead of being immediately underneath
 " it. The elastic roll is hung on pivoted levers connected by rods
 " with eccentrics on a shaft which can be turned by a hand lever
 " so as to throw up or draw down the elastic roll as required.

[Printed, *inf.* Drawings.]

A.D. 1888, May 6. - No 1009.

ANLWORTH, HARRI. " Improvements in machinery or appa-
 " ratus for cutting hides or skins." The invention is as follows :
 "—"The apparatus consists in a driving or fly-wheel, having any
 " required number of arms, each being furnished with suitable
 " knives or cutters to act upon or cut the hide as it is advanced
 " thereto. The hide is fed to the knives from a supply trough
 " or guide by two or more pairs of fluted rollers, which are ad-
 " justable in bearings and receive an intermittent rotatory motion
 " through a train of gearing (composed of spur and change
 " wheels) from the driving or cutting wheel. The action of
 " cutting the hide into strips or shreds is performed by the revo-
 " lution of the driving wheel bringing the cutters into contact

“ with the hide, and cutting against the edge of a metal plate
 “ forming the end of the feeding trough, the hide being advanced
 “ at certain intervals, regulated by the change wheels according
 “ to the width of the strips or cuttings required and the number
 “ of knives employed.”

[Printed, 16d. Drawing.]

A.D. 1858, May 21.—N° 1132. (* *)

HENRY, MICHAEL.—(*A communication from Messrs. Vasseurs and Houbigant.*)—“ Improvements in the manufacture or preparation of ink and paper, to adapt them for copying purposes; in preserving food, skins, and hides; in rendering lint, vesicatory paper, and textile fabrics absorbent; and in treating mortar, cement, and other matters, in order to keep them in a damp state.” These are, first, “ the application of glycerine to the purpose of obtaining copies of writings by preparing either the ink or the paper with glycerine, whatever be the means employed for preparing the same forthwith.”

Second, “ the application of glycerine to the purpose of preserving food, skins, and hides; for keeping cement, mastic, mortar, paste, and other matters in a damp condition; and for rendering vesicatory paper, lint, and textile fabrics absorbent.” With regard to hides and skins, “ glycerine may be employed instead of common salt for preserving untanned hides and skins, especially when intended for exportation, and thereby requiring rapid means of applying a preserving agent.”

Third, “ preparing ink and paper for enabling copies or impressions to be taken.” “ The writing paper may be prepared either by introducing glycerine into the pulp,” or “ by damping it therewith after it has been made up into books or otherwise;” or “ ink may be prepared or combined with glycerine.” Various receipts are given for inks.

Fourth, “ rendering copying paper better adapted for the taking of copies or impressions by glazing, pressing, or saturating it.”

Fifth, “ the preparation of hygometric ink and paper, by means of glycerine, for the purpose of enabling copies or impressions to be taken without mechanical pressure.”

[Printed, 4d. No Drawings.]

A.D. 1858, May 29.—N° 1217.

HENRY, MICHAEL.—(*A communication from J. B. Vasseur and A. Houbigant.*)—"Improvements in and in preparing agents for dyeing, preparing for dyeing, and tanning, and applying certain of the resulting products for obtaining pulp for paper and pasteboard, and the manufacture of blacking." This invention consists in the use for dyeing purposes of concentrated baths of vegetable matters containing resinous substances and tannin such as gall, nut, sumac, &c., treated or not with acids or chlorine; and also of those containing resinous substances but no tannin, treated with acids or chlorine, and also vegetable matters containing a bitter or styptic principle similarly treated. "Also vegetable tanning agents or matters containing tannin (such as tan, oak, bark, sumac, &c.), are treated with chlorine or acids in order to deprive such agents of colour and obtain colourless tanning products by tanning hides and skins therewith." The deposit of the decoctions of the baths containing tannin, mixed with a salt of iron and gum or treacle makes a serviceable blacking.

[Printed, 4d. No Drawings.]

A.D. 1858, June 9.—N° 1299. (* *)

LEES, SAMUEL.—(*Provisional protection only.*)—"Improvements in the manufacture of tan or tannin, and in tanning hides to make leather." These are, treating the oils obtained from coals, cannel, schists, &c., with strong sulphuric acid, "until a black carbonaceous pitchy substance is formed. The process is facilitated by steam passing through pipes placed within the vat containing the oil and sulphuric acid, and which are agitated until the carbonaceous pitchy substance is obtained, and any undecomposed oil found upon the surface must be taken therefrom and may be used for lubricating machinery." The pitchy substance is treated with nitric acid and boiled, after which, liquid ammonia, or gas tar water, or other alkali is added, until it takes up the remaining acids. Steam is applied to keep the substance melted, and an excess of alkali is avoided on account of dissolving the pitchy substance. This substance is named "mineral tan," and is dissolved in soda, potash, or alkali: the hides or skins are steeped in the solution, and afterwards in "a solution of alum or other metallic salts."

[Printed, 4d. No Drawings.]

A.D. 1858, June 10.—N° 1323.

WILKINSON, WILLIAM.—(*Provisional protection only.*)—"Certain new textile and other combined fabrics, and means of ornamenting fabrics and skins." So far as this invention applies to leather, it consists of a combined fabric made "by cementing a cut-pile or other fabric to the back of leather, kid, and other skins, and making the solution or adhesive matter employed to unite the fabric to the skin porous by forming holes therein, in order that the finished combined fabric may be porous."

[Printed, 4d. No Drawings.]

A.D. 1858, July 20.—N° 1637.

DOLEY, CHARLES, BIGLAND, EDWIN, and WORRALL, THOMAS HENRY.—"Improvements in ornamenting metallic and non-metallic surfaces." The patterns are drawn upon glass with a composition of bees-wax, tallow, and pitch, and then etched in with fluoric acid. The composition is scraped off, and the glass embedded with plaster of Paris on a slate or stone slab. The part etched is then filled up with a composition of the following ingredients:—Bees-wax, shellac, tar, varnish, and gas black. An impression is then taken upon unsized paper, and the paper damped and rolled on the article which is to have the pattern on it. The paper is then washed off, and the article is placed for a short time in a cistern or tank filled with dilute nitric or other suitable acid; when taken out it is washed with strong ley of potash, lime, soap, and water, which removes all the composition, and the article will appear with the pattern sunk into it. The glass plates so prepared may be used for embossing leather.

[Printed, 4d. No Drawings.]

A.D. 1858, August 14.—N° 1860.

LISTER, SAMUEL CUNLIFFE, and Warburton, JAMES.—Improvements in dyeing, tanning, and washing wool and other materials. This invention consists in conducting these processes in vessels so arranged that the air may be excluded, and atmospheric or other pressure applied to facilitate a more rapid and complete saturation. The material to be operated upon is placed

in an air-tight vessel, and the air exhausted ; the coloring, tanning, or washing matter is then admitted. If necessary, a fresh vacuum can be made, and fresh coloring or other matter admitted as often as necessary. The vessel may be heated by steam pipes or other means. A force pump may be used to force in the dyeing or tanning liquor, or any other suitable pressure may be applied.

[Printed, 4d. No Drawings.]

A.D. 1858, September 24.—N° 2146.

HENSON, HENRY HENSON, and HENSON, WILLIAM FREDERICK.—“Improvements in waterproofing leather, woven fabrics, fibrous, and other materials, and also of rendering them fireproof or partially fire-proof.” The object of the invention is to give leather, &c. “the power of repelling water or resisting the action of damp or moisture, whilst at the same time the particular ventilating property of each of the materials is preserved,” and of giving them also the power of resisting or partially resisting the action of fire. This is effected by passing the material through “a solution of chloride of zinc, and then through a mixture of solutions of hydrated protoxide of lead, and sulphate or acetate of alumina, or both, if found desirable ;” or any soluble salt of alumina may be used, or a mixture of a solution of silicate of soda, or of potash, and hydrated oxide of lead. Also a mixture of solutions of nitrate of lead, acetate of lead, and sulphate of alumina ; or instead of these mixtures, or in conjunction with them, soda alum, or manganese alum, or any of the double sulphates. The materials may also be tanned before they are immersed in these solutions.

[Printed, 4d. No Drawings.]

A.D. 1858, October 14.—N° 2292.

CLARK, WILLIAM.—(*A communication from Antoine Louis Adolphe Favier.*)—“Improvements in tanning hides and in apparatus employed therein.” Three processes are described. The first consists in “tanning by application of the pressure of the tanning liquid.” For this purpose a double frame is used, “consisting of parts hinged together, and capable of being connected by means of screws or any other suitable means.” The hide is stripped of its hair, and the edges “after being placed together are fastened tightly between the several parts of the

"frame, so as to form a sort of bag." The vat containing the tanning liquor is placed at a considerable height above this bag, and the liquor descends through a pipe into the bag through which the liquor gradually filters. When there is no vat, a force pump is used to cause the liquor to pass through the hide.

The second process consists in "tanning by pressure of the liquid and by a vacuum." The hide is placed so as to form a diaphragm between two vats, its edges being "fastened between the two horizontal flanches of the vats," and it being supported by a grating. Liquor is placed in the upper vat and the air is exhausted from the vat under the skin by means of an exhaust pump. The liquor is thus caused to filter through the skin, the grating being moved after a time in order that "the liquid may act on those places on which its action has been prevented by the bars of the grating."

The third process consists in "tanning by means of a vacuum alone." A vat is placed at such a height that the lower part of it is more than thirty-four feet above the ground. The vat is open at the top, and the hide is stretched over the top and supported by a grating. The vat communicates by means of a pipe with a reservoir placed on the ground. This pipe can be closed by a stop-cock. The vat is filled with tanning liquor, and the skin stretched over it, the stop-cock being closed. The stop-cock is then opened, and the liquor flows down through the pipe to the barometrical height, so that a new amount of tanning liquid poured on the upper part of the hide or skin will filter through it, and flow out through the pipe in such a manner that the vacuum will be self maintaining. The grating is moved after a time for the purpose which has been described. A second vat placed over the first vat can be used for this process, the hide being placed between the two vats.

[Printed, 8d. Drawing.]

A.D. 1858, October 16.—N° 2309.

COULON, FIRMIN JOSEPH, and GIRAND, SIMON GODEFROID.—"Improvements in the process of ornamenting skin and leather." The invention consists "in making use of an engraved cylinder, and applying a calender for impressing designs of any kind, producing the grain or imitating the appearance of any kind of skin or leather."

To effect this the patentees "take two calendering cylinders, "formed as usual of discs of paper mounted upon an iron axis. "Those discs of paper are held together by means of two "rundles, placed at the ends of the cylinder formed by the said discs. The engraved cylinder which is made of copper, is placed between and "pressed against the two calendering cylinders." There is a fourth cylinder made of wood, upon which the skin is rolled. The skin passes (apparently) between the two calendering cylinders and the engraved cylinder.

[Printed, *id.* Drawing.]

A.D. 1858, October 22.—N° 2362.

SHAW, ALEXANDER.—"A new method or mode of raising "nap on the linings of sheepskins."

This invention consists in the employment of pumice stone for raising nap on the linings of sheepskins. The linings of sheepskins are tanned and dyed, and then placed in parchment frames and fleshed and scoured in the usual manner. The pumice stone is then applied. The employment of glue sizing for the backs of the skins gives a firmer nap.

[Printed, *id.* No Drawings.]

A.D. 1858, November 3.—N° 2465.

FRYER, DANIEL, WATT, THOMAS LMACH CROWN, and HOLMES, WILLIAM.—"Improvements in tanning hides and "skins." The patentees say:—"This invention consists in tanning all leathers, skins, or hides by hydraulic pressure, and is "effected in the following manner:—We employ round upright "tanks to be made air-tight, and sufficiently strong to bear a "pressure of from 10 lbs. up to 120 lbs. to the inch, according "to the time intended to be given in the process of tanning; "these tanks are to be fitted internally with laths or hoops, or "both, to attach each skin to separately at its full length, the "internal fittings of the tanks to move upon centres, so that "the skins when once placed in the tank will not have to be "taken out until thoroughly tanned. The skins or hides having "been arranged in their places, the hydraulic pump is then set "to work, which forces the bark liquor (such as is used in the "old process) into the tanks up to the required pressure; the "bark liquor being now in the tanks, the fittings with the skins "should be moved about four times a day for the first three days

“ at the end of that time to be moved twice a day, and at the end
 “ of the fifth day once, until fully tanned, the liquor is then to
 “ be drawn off, the skins or hides removed and others substituted
 “ to be treated in like manner.”

[Printed, 4d. No Drawings.]

A.D. 1858, November 10.—N° 2520.

TAYLOR, WILLIAM GARNETT.—“ Improvements in removing
 “ the fur from skins, and preparing said skins for tanning.”
 The patentee says :—“ I moisten or wet the flesh side of the skin
 “ until it becomes soft and pliable, I then place it upon a curved
 “ top table or block, and after stretching it, I fasten it to tenter
 “ hooks attached to the table or block. When the skin is thus
 “ stretched and attached to the table or block, I remove the fur
 “ with a pair of scissors or shears, having or not a plough tool
 “ connected thereto in front, to raise the fur in advance of the
 “ cutting of the scissors or shears, the object being to remove the
 “ fur without injuring the surface or face of the skin, thereby
 “ rendering the fur available for commercial and manufacturing
 “ purposes, and the skin for tanning in the usual manner.”

[Printed, 6d. Drawing.]

A.D. 1858, November 17.—N° 2595.

CLARK, WILLIAM.—(*A communication from Antoine Louis Adolphe Favier.*)—“ A process of thickening, strengthening, and
 “ improving tanned hides.” The patentee says :—“ Leather,
 “ although tanned, is often unsubstantial and light in weight; it
 “ may be thickened and strengthened by proceeding in the follow-
 “ ing manner :—The deficient hide of leather is soaked in a bath
 “ of gelatine, which is extracted from refuse hides, and allowed
 “ to remain about two or three hours; the leather after it has
 “ absorbed a certain quantity of the gelatine is withdrawn from
 “ this first bath for the purpose of being steeped in a solution of
 “ tannic matter, suitably concentrated. A portion of this acid
 “ combines with the gelatine which has been absorbed by the hide
 “ in the previous operation; the leather is thereby rendered more
 “ uniform than before, and at the same time perfectly tanned.
 “ By repeatedly steeping the hide or leather alternately in
 “ baths of gelatine and tannic acid, its weight may be sensibly
 “ increased, and the desired consistency imparted to it without
 “ losing any of its original qualities.”

The gelatinous and tanning liquids are applied by being caused to filter alternately through the hides. Three methods of thus applying them are described:—1st, By placing the hide, held in such a manner by a jointed frame as to form a kind of bag, some distance below a vat alternately containing "gelatinous and "tanning liquids." The liquors descend through a pipe from the vat into the bag and filter through it. 2dly, By placing the hide as a diaphragm between two vats one under the other. The upper vat is alternately charged with "gelatinous fluid and "tanning liquid," the air being exhausted from the lower vat, so that the liquids flowing from the upper vat are filtered through by the pressure of the atmosphere. The hide is supported by a frame moved when necessary. 3dly, By using a vat placed more than twelve yards from the ground, and communicating with a reservoir on the ground by a pipe furnished with a stopcock. This being closed the vat is filled with water, and the hide, supported as before by a grating, is stretched over the top of the vat. The stopcock is then opened, and the water will flow down a certain distance so as to cause a vacuum under the hide. Gelatinous and tanning liquids are then alternately poured on the hide, and are filtered through by the pressure of the atmosphere.

[Printed, ad. Drawings.]

A.D. 1858, November 26.—N^o 2888.

MENNON, MAUR ANTOINE FRANÇOIS. —(A communication.)
 —(Provisional protection only.)—The inventor says:—"The object of the invention communicated to me, is, the production of
 "a semi-transparent leather, susceptible of many of the applications of ivory, horn, whalebone, and analogous materials.
 "To attain this end, the raw hides are soaked in a solution of lime, to remove the hair and extraneous matter; they are afterwards submitted to intense pressure, which, in condensing the pores gives to the skin a degree of hardness, transparency, and elasticity hitherto unattained by any of the known processes."

[Printed, ad. No Drawings.]

A.D. 1858, December 16.—N^o 2889.

WILMON, ROBERT, senior, and WILMON, ROBERT, junior. —
 Preparation of leather in combination with india-rubber and other materials for the manufacture of hose pipes, &c. The object of

this invention is so to treat leather and combine it with india-rubber and other materials, as to render it more impervious to water, steam, or frost, and increase its strength and durability. For this purpose the leather is scoured in cold water, and the inner surface then cut or shaved to the requisite thickness, and a layer of dubbing applied. The outer surface is taken off with a currier's knife, and the leather punctured by means of a roller set with spikes. A solution of india-rubber and shellac is then applied so as to enter into the punctures. A thin solution of india-rubber is then applied, which serves as a foundation to receive a covering of vulcanized or india-rubber cloth, or vulcanized or other india-rubber. The combined sheets of leather and india-rubber are then stretched on a roller, and pressure applied till they adhere. A further solution of india-rubber is then applied to the outer surface of the leather. Hose pipes, &c. may be overlapped and rivetted in the usual way, the india-rubber surface forming the inside of the pipe.

[Printed, 4d. No Drawings.]

A.D. 1858, December 21.—N^o 2916.

BÉLIARD, AUGUSTE STANISLAS.—“An improved machine for “pumicing felts, tissues, and skins.” This invention consists in the construction of a machine for pumicing skins, &c. with “a revolving grindstone or mill, which is capable of being traversed about on the work.” For this purpose a revolving pumice stone of cylindrical, conical, or other suitable form is used. The spindle of the stone is passed through a block or handle, and connected “by universal joints and sliding or elongating bars, “or tubes or ‘lazy-tongs,’ or similar connections, with a shaft “revolving in fixed bearings, and which may be driven by a “band and a foot wheel, or by a steam engine or otherwise. By “means of the handle the revolving stone may be moved about “in all directions on the surface to be pumiced.”

[Printed, 8d. Drawing.]

A.D. 1858, December 30.—N^o 2992.

BROOMAN, RICHARD ARCHIBALD—(*A communication from F. Martin.*)—“Improvements in machinery for splitting or dividing “hides, skins, leather, and other like materials.” The invention consists:—“First, in the employment of knives or cutters, by preference serrated and attached to a cutter carrier, the height of

" which is regulated by means of screws connected with its supports, and which receives a reciprocating motion from a main shaft by a connecting rod or otherwise. Secondly, in the employment of a roller for supporting the hides, skins, &c., as they are cut, which roller is incapable of ascending or descending motions, being supported in fixed bearings.

" Thirdly, in the employment of a movable bar or presser carrier for carrying a number of pressers which bear on the hides, skins, &c., as they are cut immediately in front of the knives, and which are kept down upon the hides, skins, &c., by springs. This presser carrier is rendered adjustable as to height by screws passing vertically through each end of a frame holding the presser carrier.

" Fourthly, in forming the said pressers, each square or rectangular in section at their lower parts, and sinking these parts in a groove in the carrier to prevent them turning round or otherwise moving improperly.

" Fifthly, in communicating motion to the cutter carrier by a connecting rod or other appliances at the end of the said carrier, and not at or near the middle, to prevent trembling or unsteadiness of action.

" Sixthly, an arrangement of antifrictional or other supports to enable the cutter carrier to slide smoothly in its bearings.

" Seventhly, the employment of a roller of less diameter at the middle than at the ends for winding up the cut hides, skins, &c., this roller being driven by means by an endless screw mounted upon a vertical shaft gearing into a wheel, the shaft being put in motion by another endless screw on a horizontal shaft gearing into a wheel on the lower part of the vertical shaft.

" Eighthly, a means of throwing the said roller in and out of gear by means of suitable levers, handles, &c."

[Printed, 10d. Drawing.]

1850.

A.D. 1850, January 12.—N^o 04.

HANDS, JAMES.—"Improvements in preserving or preparing skins intended to be converted into leather or otherwise manufactured." The patentee says:—"Skins which are intended to

" be converted into leather, or otherwise manufactured, frequently
 " have salt (chloride of sodium) or some other preservative material
 " applied to them in order to preserve them from putrefaction or
 " decomposition during the interval which must elapse before
 " they are subjected to the processes by which they are to be
 " converted into leather." "My said invention consists in sub-
 " jecting skins to the action of gaseous chemical agents for the
 " purpose of preserving them more effectually and also facilitating,
 " or avoiding injury, to the processes by which they are to be con-
 " verted into leather or otherwise manufactured. The chemical
 " agents which I employ in performing my invention are bin-
 " oxide of nitrogen, nitrous acid, and sulphurous acid, each in a
 " gaseous state. Skins may be conveniently subjected to the
 " to the action of these gases by suspending them in an air-tight
 " chamber in such a manner that the gas or gases employed for
 " preserving them in the chamber shall have free access to every
 " part of the surface of each of the skins." Neat skins should
 be allowed to remain in the gas about ten hours. For smaller or
 larger skins the time should be proportionately varied. The sul-
 phurous acid is best produced by burning sulphur with small
 quantities of nitrate of potash and charcoal in the chamber. The
 other agents if employed may be introduced from a gasometer.

[Printed, *Ad.* No Drawings.]

A.D. 1859, January 27.—N° 243.

MERCER, JAMES.—(*A communication from Joseph Armstrong.*)
 —(*Provisional protection only.*)—"Improvements in the process
 " of currying leather." The inventor says:—"I take the hides
 " direct from the tan vat or pit, and place them in a machine
 " (similar, say, to a cotton or cider press), and subject them to a
 " pressure sufficient to expel the moisture or liquor; I then take
 " the hides and apply stuffing or grease to them, so that they
 " will be 'plumped up' and made to receive the grease to advan-
 " tage; much time is saved by this process, and labour materially
 " lessened."

[Printed, *Ad.* No Drawings.]

A.D. 1859, February 16.—N° 440. (* *)

EASON, JOHN.—"Improvements in apparatus applicable to
 " tanning, dyeing, and obtaining extracts from vegetable, animal,
 " and mineral substances."

The invention consists, 1. of machinery for tanning by hydrostatic pressure. The tanks used are square, oval, or cylindrical, capable of bearing a pressure of from 100 to 1,000 lbs. to the square inch, and fitted with air-tight covers. They are lined with marine glue, gutta serena, lead, copper, or wood. The interior of these tanks are fitted with frames or sashes which run in grooves on each side of the tank. These frames have the skins, &c. stretched and laced over them, or merely hung over as required. When the latter are in their places the lid is secured, water is first let in for washing out the lime, and afterwards the tanning liquor is forced in by hydraulic or hydrostatic pressure.

For colouring the hides, &c. by atmospheric influence, the frames are lifted out by chains attached to the corners of them,

"For the purpose of obtaining extracts from various substances,
"I place a perforated metallic plate about one-third distance
"from the bottom of the tank, on which is laid a layer of sponge
"or other suitable filtering material, above which is another
"perforated plate, and upon this the substance to be operated
"on is laid in a pulverized state. Hot and cold liquor is then
"forced into the upper part by hydraulic pressure, while at the
"same time an air pump exhausts the air in the lower chamber,
"into which the extracts pass."

[Printed, &c. Drawings.]

A.D. 1869, March 21.—N^o 715.

CRESSO, GEORGE.—"Improvements in currying or manufacturing leather." The patentee says:—"My invention relates to
"a new system or series of operations for expediting the process
"of currying or dressing leather, to effect which I take the leather
"from the tanner or currier in its dry shaved or dry unshaved
"state, or in its dry split or dry unsplit state, or in its dry unscoured
"or dry scoured state, and stuff it with, or apply to it in the said
"dry state oil or tallow, or both combined, or grease of any kind,
"or with anything having the nature or properties of grease. To
"prepare the leather for skiving, shaving, or splitting, I submit
"the action of water after stuffing, and I skive, split, shave, or
"flat the leather after the stuffing, oiling, or greasing operation.
"To extract the bloom I apply to the grain, oil, tallow, or grease,
"and use a brush, stone, pumicestone, or other suitable tools,
"then gloss on the flesh, dry, grain up, and wax. Leather stuffed

“ or greased in the dry shaved state may be grained up or softened
 “ in the stuffing process or operation and then waxed.”

[Printed, 4d. No Drawings.]

A.D. 1859, March 25.—N^o 760.

HUMPHREYS, HUMPHREY.—(*Provisional protection only.*)—

“ An improvement in unhairing hides and skins, and in the manu-
 “ facture of leather.” The inventor says :—“ This invention has
 “ for its object an improvement in unhairing hides and skins, and
 “ in the manufacture of leather, and consists in the application of
 “ the ashes of spent tanner’s bark in the unhairing process. For
 “ this purpose the spent tanner’s bark is burned to an ash, the
 “ ash is combined with water and is then used for unhairing
 “ hides and skins in like manner to that in which lime and other
 “ matters have before been employed.”

[Printed, 4d. No Drawings.]

A.D. 1859, March 29.—N^o 780.

MOSSMAN, WILLIAM.—“ Improvements in machinery applied
 “ to embossing or cutting presses for the better and more expen-
 “ ditious manner of manufacturing ornamental cut-out and
 “ embossed work in paper, leather, parchment, cloth, foil, and
 “ other material.”

These improvements are effected as follows :—

“ 1st. By means of a plate or block of metal being affixed to
 “ the face of the dab, or placed between the dab and the die,
 “ whereby the inequalities (if any) of the cutting edges of the
 “ die or dies are met by adapting such plate or plates on blocks
 “ to press equally (when the screw is forced down) upon the
 “ whole of the cutting edges of the die or dies.

“ 2nd. The using of thin plates of metal, such as copper, brass,
 “ lead, tin, zinc, &c., placed between the paper, leather, parchment,
 “ cloth, foil, &c., to be cut and embossed, and the plate or block
 “ of metal is placed between the dab and the die, whereby when
 “ the dab is forced down by means of the screw the cutting edges
 “ of the die or dies are pressed through the paper, leather, &c.
 “ used into the thin plate of metal without cutting into the
 “ surface of the dab, or plate, or block between the dab and the
 “ die.

“ 3rd. A framework adapted to such embossing or cutting
 “ presses wherein the die or dies are fixed, having a lid or cover

" on joints to cover or uncover the die or dies. This framework
 " is fitted to slide easily to and fro under the press, that the die
 " or dies thereby may be placed under the dab to receive the
 " pressure, and withdrawn for the purpose of placing and
 " removing the paper (or other substance to be cut or embossed),
 " and also placing and removing the thin plate of metal. At
 " each alternate withdrawal of the frame, the lid or cover (with a
 " force thereon) is shut down, then being placed under the dab,
 " and the screw forced down, the already cut paper or other sub-
 " stance is embossed without removing the same from the die;
 " the lid or cover is kept in place by means of points on move-
 " able joints, which points enter the lid or cover, and enable it to
 " act the same as a hinge."

[Printed, 4d. No Drawings.]

A.D. 1859, April 2.—N° 824.

RIPLEY, ABRAHAM, and ROBERTS, JOHN.—"Improvements
 " in machinery for striking or scraping leather and tanned or
 " untanned hides." The patentees say:—"Upon a suitably
 " formed bench or table we mount the machinery;" "on rollers
 " turning on axles on the bench we cause an endless band to
 " traverse over its surface; on this band the leather or hide to be
 " operated upon is carried. A portion of the surface of the
 " bench is formed into the bed, on which the knives act on the
 " face of the leather; this portion of the bench is preferably near
 " to the centre of the table, so that the 'striking' apparatus shall
 " be over it. The bed we propose to form, either of elastic
 " materials, or to be inelastic itself, but supported on elastic
 " materials or springs. Upon the frame of the bench, and pre-
 " ferably under the bed last mentioned, we mount in proper
 " bearings the main driving axle of the machine, and from this
 " shaft we obtain the three motions before mentioned. We would
 " here premise that the machine being symmetrical about a central
 " plane, the parts are in pairs, and symmetrically placed on each side
 " of the axis of that plane. Upon this driving axle we form two
 " double cranks, from these cranks proceed two connecting rods,
 " which actuate two vertical rocking shafts; these rocking shafts
 " in their turn support and actuate a horizontal shaft, from
 " which proceed two rods, each actuating a block, and causing it
 " to move backwards and forwards in slides or guides which are

" formed in a frame placed over the axle and over the before-named bed ; these blocks are attached to and give a similar motion to the frame, within which two knives are attached." " Upon the said axle we also mount two cams, the peripheries of which acting on two vertical rods, give the latter a vertical motion, which they communicate to the framework supporting the slides, the blocks, and the knives. By means of this arrangement and the peculiar form of the cams the knives are, at the beginning of the forward stroke, lowered and brought in contact with the surface to be operated upon, and continued there until the end of the stroke, when by the same means they are raised above the said surface, and kept above it during the time occupied by the backward stroke, and at the end of it and beginning of the forward one they are as before described, brought in contact again." " We mount the blades of the knives in frames, and in such a way that they will rotate or oscillate round the point which attaches them to the frame." " The following is the mode by which they are caused to rotate or oscillate on their edges :—A spindle which is attached to the end of the blade, passes through a vertical slot in the slide blocks, and enters into a horizontal slot or guide in a side frame, which, by means of spindles at each extremity passing into vertical slots, can be set at any angle with the plane of the slides, and hence any degree of angular rotation given to the knives. In order to produce an equable action of the cam and vertical rod upon the frame bearing the slides and knives, we suspend the said frame from a spring placed over it, and from this means obtain a compensating and equable action. In order to carry the aforesaid endless band regularly forward, and so carry with it the hide, we, by the motion of the cam, actuate through rods a detent, which works in a toothed wheel mounted upon the axle of the roller which carries the band." To hold the band and the hide during the forward action of the knives, a horizontal bar, actuated through the cams, is brought on to the surface of the hide, and retained there during the action of the knives."

[Printed, 1s. Drawings.]

A.D. 1859, April 9.—N° 894.

VASSEROT, CHARLES FRÉDÉRIC. — (*A communication from Jean Bascail Lucet.*)—(*Provisional protection only.*)—"A new

" motive power applicable to tanneries." The invention " consists in a horse mill, the power of which is employed to put in motion, by means of bands and pulleys, a certain number of cylinders mounted upon shafts, and turning upon pivots. The skin or leather in course of preparation is placed with the liquid in the said cylinders, these in turning receive gradually a certain force of rotation, which is communicated to a shaft actuating a stamping mill for breaking the tan to a suitable size."

[Printed, 4d. No Drawings.]

A.D. 1859, April 15.—N° 950.

BOOT, ROBERT.—(*Provisional protection only.*)—"Improvements in treating sheep or other pelts, so as to give them the appearance of rough calf." The inventor says:—"My invention is intended to render the whole or unsplit skins or pelts of sheep and other animals similar in appearance, and applicable for the same purposes as rough calf. For this purpose I select such pelts as appear by their texture most suitable, and prepare and tan them in the usual manner, after which I put them in frames and strain them out to the utmost extent; I then, while in a wet state, work them with a knife, and rub them with pumicestone (or other suitable material) until all superfluities are removed; before dry, I shave them in furtherance of the same object, and when dry I again rub them over with pumicestone until the requisite fine close surface resembling rough calf is produced."

[Printed, 4d. No Drawings.]

A.D. 1859, June 9.—N° 1405.

WELSFORD, ENOS.—"Improvements in tanning." The patentee says:—"In place of employing the bark of the oak tree or other matters heretofore employed for tanning, I employ the leaves of the different trees and shrubs of the family of the terebinthaceæ class, commonly called lentiscus or mastic, such as the pistacia terebinthus, pistacia Atlantica, pistacia lentiscus, rhus coriaria, rhus pentaphylla, and others abounding on the coasts of the Mediterranean and elsewhere. The way in which I prefer to employ these leaves is to soak the skins in an infusion made by pouring boiling water over the leaves when dry,

“ and in a pounded or unpounded state, or in a decoction made
“ by boiling the leaves in water, a stronger decoction or infusion
“ of the leaves being from time to time added to the first until
“ the skins are converted into leather. The first decoction or infusion I prefer to be of a strength of about 8°, and gradually
“ to increase the strength to about 30° of the gauge employed
“ by tanners.” A concentrated extract may, if required, be made by boiling the leaves, and concentrating the decoction by evaporation.

[Printed, 4d. No Drawings.]

A.D. 1859, June 16.—N° 1449.

TALLENT, THOMAS EDWARD.—“ Improvements in the manufacture of leather and in machinery for that purpose.” The patentee says:—“ Upon two side frames is mounted a cylinder or drum, on which the hide or leather to be operated upon travels, or is carried forward. Upon the same frames, and placed over the cylinder or drum, are two endless bands, which travel in opposite directions from the centre, or from within the machine towards the side of it. These bands are driven by pullies, the two outer of which are mounted on axles, having bearings in a sliding or moveable carriage frame, on the outside face of each side frame, and the two inner are mounted upon an axle which has its bearings in two longitudinal frames, which are firmly connected at each end with the said sliding carriages, so that the whole system of pullies and their bearings are rigidly united with each other, and, although supported on side frames, can, by means of the sliding carriages, be all simultaneously moved upwards or downwards, and thus brought nearer or removed from the hide on the drum. Upon these two endless bands, and at suitable distances apart, I fix knives or scrapers, so that when motion is communicated to the drum and the endless bands, the knives or scrapers moving along with the bands over the hide or leather, which is carried forward by the drum, unhair, depile, scrape, strike, or skud its surface. In some cases, in addition to the scrapers, I fix also upon the bands a number of brushes.” “The knives or scrapers are pressed to the surface of the hide by means of a series of rollers urging the band downwards; in order, however, to give the requisite elasticity, the pressure of the rollers is regulated by having their bearings in journals actuated by a spring. Moreover, in

" some cases I prefer to substitute for the drum or cylinder before described, the segment or sector of a drum or cylinder the length of the surface of which shall be equal to that of the largest sized hide. I mount this segment on an axis as before, but instead of a regular circular motion, I actuate it so as to produce a reciprocating motion of oscillation. The whole machine, when thus arranged and combined, is put in action by a system of straps, bands, and pullies, or gear, which regulates the motion of the different parts."

[Printed, 1s. Drawings.]

A.D. 1859, June 28.—N^o 1541.

BAILLIE, JOHN MARIA JOSEPH.—(*A communication from A. Paulmier.*)—"A new process for tanning hides and skins." The invention consists in using in combination with the tanning material ordinarily in use "certain metallic, earthy, and alkaline chlorides." The patentee says :—"The substances I employ are the following :—Metallic chlorides, viz., chloride of tin, zinc, antimony, or lead; earthy chlorides, viz., chloride of aluminum, magnesium, strontium, or barium; earthy metallic chlorides, viz., the double chloride of tin, with alumina, magnesia, strontia, or baryta, or antimony, zinc, or lead, with one of the same bases; alkaline metallic chlorides, viz., chloride of antimony with potash, soda, or ammonia, or of zinc or tin, with one of the same bases; earthy alkaline chlorides, viz., chlorides of alumina with potash, soda, or ammonia, or of magnesia, strontia, or baryta with one of the same bases. In the manufacture of firm or stout leathers, recourse will be had to the metallic chlorides or alkaline metallic chlorides; if, on the contrary, it is intended to fabricate supple leather, recourse will only be had to the earthy chlorides or metallic earthy chlorides, and the preference will be given to the chlorides of aluminium or of magnesium, or to the double chlorides of aluminium, or of zinc or tin, or to the double chlorides of zinc or of tin, and magnesium. The materials which I have enumerated bear to the albumen and of the fibrin of the skin the same relation which tannin does to gelatine. They are employed previously, but better simultaneously with the bark of the oak, or other vegetable matter containing tannin." The materials described are used by mixing them with the vegetable tanning substances during the first part of the operation of tanning,

but before the metallic substances are used the hides, &c. are immersed, for a short time, in weak vegetable tanning mixtures.

[Printed, *4d.* No Drawings.]

A.D. 1859, August 10.—N° 1853.

SHAW, ALEXANDER.—(*Provisional protection only.*)—The inventor says :—“ My invention consists in preparing sheep or
“ other skins or pelts, or the linings thereof, by drying and tan-
“ ning them in the usual way, well known to leather finishers,
“ and after subsequently placing them in parchment frames,
“ and fleshing them off in the usual manner or mode in which
“ parchment is fleshed and scoured, I apply pumicestone to the
“ same, and after they have become dried, I apply the pumice-
“ stone again; by this means a finer nap is raised on them, to
“ which is given the appearance of rough calf skin or sheep skin,
“ and by the same or similar means I can also obtain the appear-
“ ance of kid leather on the same, and can prepare them for
“ enamelling or japanning the same.”

[Printed, *4d.* No Drawings.]

A.D. 1859, September 12.—N° 2076.

EASON, JOHN.—(*Provisional protection only.*)—The inventor says :—“ This invention consists in the manufacture of oiled
“ leathers in a more speedy and efficient manner than heretofore.
“ I propose placing the skins on frames in suitably constructed
“ tanks or vessels, or they may be suspended in said tanks or
“ vessels so as to isolate each skin therein, and therefrom exhaust
“ the air, thereby opening the pores of the skin, and by this
“ means extracting the lime therefrom, the oil is then let in and
“ forced by hydraulic or hydrostatic pressure into the pores.”
Dubbing may be forced into leather in a similar manner.

[Printed, *4d.* No Drawings.]

A.D. 1859, October 17.—N° 2367.

NEWTON, WILLIAM EDWARD.—(*A communication from Vincent Marie Féraud, Leonard Laureau, and Felix Richard.*)—
“ Improvements in preserving and disinfecting organic sub-
“ stances.” “ The principle of this invention consists in the
“ employment of heavy hydrocarbons and oils extracted from
“ mineral or vegetable pitch or tar, naphtha, bitumen, asphaltés,
“ resins, balms, and other analogous carbonaceous matters.”
The hydrocarbons which have the greatest preserving property are

those distilled under 150 degrees heat of the centigrade thermometer, but the use of oils extracted at higher or lower temperatures is also claimed. All organic matters may be preserved by the addition to them of such hydrocarbons, or by immersion in the hydrocarbons when brought to a liquid state. It is stated that the invention may be employed for the preservation of the skins of animals, whether intended to be tanned, dressed, or manufactured into fur.

[Printed, 4d. No Drawings.]

A.D. 1859, October 19.—N° 2388. (* *)

GREGG, GEORGE.—(*Provisional protection only.*)—"An improved method of dyeing leather black."

"I dye the leather black in the dry tanned state in the grain before the leather has been submitted to the action of water or steam, or made wet in any way whatever. The mode hitherto adopted by the currying trade is to wet the leather first, and then black it after the leather has gone through several (eight or nine) processes. In consequence of this change, I am enabled to curry my leather so blackened or dyed at one-half the usual price paid under the old mode, at the same time producing an article equally good."

[Printed, 4d. No Drawings.]

A.D. 1859, November 8.—N° 2538.

LEARCH, ADOLPHE.—(*A communication from Henry Hendryckx.*)—"An improved process of manufacturing embossed sheets or stuffs called embossed fictitious leather for hangings and household furnitures." "The materials used for manufacturing the fictitious leather to be embossed are of various natures according to the use it is intended for. It can be made with one or more sheets of paper glued together with a mixture composed of flour, white chalk, glue, and boiled oil, or it can be made with a sheet of paper covered with cloth." "The principal parts of the pattern are printed either by means of a typographical press with oily colored inks, or with water colours and hand blocks as for manufacturing paper hangings, it is then embossed with a common stamping press with a metallic under-plate, where the hollow parts of the pattern have been engraved." The embossed hangings can also be made by the same process of leather, gutta percha, or any suitable stuff.

[Printed, 4d. No Drawings.]

A.D. 1859, November 15.—N° 2591. (* *)

WARD, WILLIAM HENRY. — (*Provisional protection only.*) —
“Improvements in tanning hides and skins.”

The inventor states :—“The object of this invention is the tanning of hides and skins by a more speedy and efficient process than heretofore, in suitably arranged vats or tanks, by the aid of electricity, and is effected in the following manner :—I propose employing vats or tanks of the ordinary or other suitable construction, the same being lined with india-rubber, cloth, or other non-conducting substance. These vats or tanks are filled with tanning liquor, and the hides or skins suspended therein, and an electric current applied by means of a suitable battery. The effect of this is, that the electric current passes through the whole of the contents of the vats or tanks, and the tanning process instantly commences and continues so to do until the strength of the liquor is absorbed, when (if desired) fresh liquor may be added, and the current again applied.

“By this means hides and skins may be fully and effectually tanned in the space of a few hours.”

[Printed, 4d. No Drawings.]

A.D. 1859, November 19.—N° 2616.

CLARK, WILLIAM.—(*A communication from Louis Joseph Frederic Margueritte.*) — (*Provisional protection only.*) — The inventor describes a method of preserving meat, which consists in steeping pieces of meat in molasses, and then washing them and drying them. He further says :—“This principle of treatment is also applicable to tripe and skins. The skins or hides are first steeped in the molasses in the manner above described, and then cleansed from sugar, and tanned in the ordinary manner.”

[Printed, 4d. No Drawings.]

A.D. 1859, November 21.—N° 2634.

CLAUS, CHARLES FREDERICK. — (*Provisional protection not allowed.*) — The inventor says :—“I treat the infusions of the tanning materials, particularly those of hemlock, bark, and divi, or the leather tanned by the same, with aluminous sub-salts.”

[Printed, 4d. No Drawings.]

A.D. 1859, December 31.—N° 3000.

EASON, JOHN.—“Improvements in tanning and in the manufacture of leather, and in machinery adapted thereto.” The machinery used “consists of a tank or vessel in which hides of skins are suspended during the process of tanning.” “This tank or vessel is capable of being closed and made air and water-tight, and of sufficient strength to bear the exhaustion of the air from it, and a considerable amount of pressure when tanning or other liquor is forced into it, in tanning or operating upon hides or skins.” The tank is cylindrical in form, and the interior of it is fitted with a vertical metallic shaft which works on a fixed bridge or step over an outlet in the bottom of the tank. Attached to the shaft near its upper end is a cross bar, having at each end a pair of segmental arms each supporting a ring of metal lined with wood. A series of laths or rails fit into notches in the wooden lining of the ring, and the hides are suspended from these rails during the process of tanning. The metallic shaft fits at its upper end into a square socket made in the lower end of a short shaft, passing through a stuffing box in the lid or cover of the tank. To this short shaft rotary motion is given. In the lid of the vessel are fixed two pipes with stop-cocks; by one of these the air is exhausted, and by the other tanning liquor is supplied. The hides to be tanned are suspended from the rails before mentioned; the lid is then screwed down by drop screws, and the air is exhausted, after which the liquor is admitted, at first rushing in to fill the vacuum, and being afterwards forced in by a force pump. The liquor is allowed to escape by means of the outlet in the bottom of the tank, so that a constant stream of liquor passes through the tank. Rotary motion is given to the hides in the tank by means of the shaft and rings before described. If required, the lime may be extracted from the hides before tanning by exhausting the air from the tank, and then letting in water.

Another part of the invention “consists of a machine for extracting or preparing the liquors used in tanning. This machine consists of a wooden tank of an oblong, square, or other suitable form and convenient size, fitted with a close cover for the purpose of retaining the heat and preventing loss by evaporation. Within the tank is a moveable frame or tray, with a perforated bottom, upon which I place the bark or other materials from which this tanning material is to be extracted by

“ water; the lower end of a piston rod is fixed to the centre of the tray, and this rod passes through a stuffing box in the centre of the cover. By means of this rod the tray within the tank is alternately raised and lowered during the process of preparing the liquor. One side of the tray is made moveable upon hinges at the bottom, so as to be capable of being let down when required, in order to remove exhausted material from the tray.” A sufficient quantity of water is put in the tank, the cover is secured and steam from a boiler is then admitted by perforated “fish bone” pipes in the bottom of the tank, for the purpose of keeping up the temperature of the liquor, the tray being moved up and down during the process.

[Printed, 1s. Drawing.]

1860.

A.D. 1860, January 17.—N^o 118.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Benjamin Paraf Javal.*)—“Improvements in extracting substances from cereal grains and some of their products, and the application of the substances extracted.”

This invention, so far as it relates to leather, consists in the use of gluten for finishing and preparing leather, and rendering it incombustible, and for binding together skins. There is no particular process described for effecting these objects. The gluten is extracted from cereal grains, such as wheat, by dissolving the gluten by weak agents that do not require to be concentrated. When the solutions are left to settle, the starch and vegetable fibrine becomes deposited, and the gluten remains in solution in the supernatant fluid. The separation may be effected more quickly by a centrifugal filtering machine, or by precipitating the gluten from the solution.

[Printed, 4d. No Drawings.]

A.D. 1860, February 3.—N^o 291.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Laurent Rocher.*)—(*Provisional protection only.*)—The inventor says:—“This invention consists in the employment of sawdust from oak and other woods instead of oak bark. The inventor states that he utilizes a comparatively waste product, and obtains results in tanning equal, if not superior, to those

“resulting from the use of oak bark, further, that he has been enabled by his invention to tan hides in three months, whereas by the employment of oak bark, from six to eight months would have been required to tan the same description of hides.”

[Printed, 4d. No Drawings.]

A.D. 1860, February 14.—N° 397.

NICKOLS, DANIEL. — (*Provisional protection only.*) — “Improvements in machinery or apparatus for separating the fur from the skins of certain animals.” To separate the fur from the skins of animals, an apparatus is used with a cylinder and knives. As the knives are made to radiate towards the centre instead of being screwed flat on the outer circumference of the cylinder their edges cut with greater ease. They are held fast in their positions by sliding blocks and screws so that “the knives can be removed when required by simply loosening the plates, the same being adjusted by set screws, the bed knife being held by screws passing through slots open at the bottom, so that the knife can be readily removed, and enable it to be worn to its fullest extent.” A brush supplied with oil by revolving cylinders in a trough is used for oiling the knives. On the top of the bed knife is placed “a guard or plate in order to maintain the skin in perfect contact with the cutting edge, and thereby prevent waste. The said guard or plate vibrates upon pivots, and when the fur is being separated rests upon the skin by its own weight or by means of a spring.” The fur when cut off is carried away by a travelling apron.

[Printed, 4d. No Drawings.]

A.D. 1860, March 6.—N° 617.

PITT ROBERT. — “Improvements in the manufacture of leather and in machinery for that purpose.” The patentee states that the machinery previously employed for striking leather has usually consisted of a roller with two screw threads or worms fixed on it, departing from a point at the centre of the length of the roller, one thread being right-handed and the other left-handed, and that machines thus constructed have not worked satisfactorily, in some cases on account of the small diameter of the roller employed, and the consequent inclination of the screw, and in other cases, where the diameter has been larger, on account

of the screws having been made with more than one entire turn, in passing from the centre to the ends of the rollers. The patentee then says:—"My invention therefore consists in employing screws or worms not making more than a complete revolution in the half length of the roller, in combination with a roller of eighteen inches in diameter at the least. When this combination is employed, while but two points of the screw act on the skin at any one time, the inclination of the thread is not so great as materially to stretch the hide or skin. My invention also consists in casting the screw thread or worm of the material known as 'white cast iron;' when made of this material they wear much longer than when made of gun metal or other material heretofore proposed. My invention also consists in attaching the screw thread or worm to the roller by making it slightly larger in interior diameter than the roller, and when the two are placed together running in soft metal or other suitable material in a liquid state to fill the space between the two; by this means a great saving in labor is effected." Two rollers are used, one over the other; they have bearings which can be adjusted. The thread is on the upper roller, and the lower roller holds the hide. The upper roller is caused to revolve by a drum placed on its axis, round which an endless band passes. On the axis of the upper roller is an excentric; the lower end of the excentric rod works in a slotted lever, which by means of a double pawl turns a ratchet wheel. To this ratchet wheel is fixed a pinion, which gears with a spur wheel fixed on the axis of the lower roller. By this means a slow motion is given to the lower roller.

[Printed, 10d. Drawing.]

A.D. 1860, March 19.—N^o 717.

CLARK, WILLIAM.—(*A communication from Wilhelm Murtz.*)—"Improvements in tanning hides." The patentee says:—"The raw hides are previously prepared as in ordinary, and immersed in lime or otherwise, to deprive them of their hair, and well cleaned. A solution of chromate of potash [CrO_5 , KO .] is then prepared in any suitable capacity in water, or other kinds of alkaline chromates will answer the purpose. When the solution is complete, as many skins are placed in the liquid as the capacity is capable of holding, so that the said skins may be covered by the liquid; motion is then imparted to them.

" These skins are left in the solution from six to twelve hours, according to their thickness. After this the skins are submitted to a washing in as much running water as possible until they are completely deprived of all extraneous matters which the solution might contain, so that no impurities may be found either on the exterior or interior of the skins. Skins thus washed regain their original whiteness, and are free from all foreign matters. By the above described process the greasy matters in the skins undergo transformation, which causes the skins to have a greater affinity for the tannin or other substances which thereby facilitates the saturation," and hides and skins thus prepared can, it is stated, be tanned in a much shorter time than is usually required.

[Printed, 4d. No Drawings.]

A.D. 1860, April 10.—N° 895.

REPELIN, Louis JOSEPH.—" An expeditious mode of tanning." The patentee says:—" I place in two parallel lines (between which I leave sufficient space for the passage of the workmen), say, twenty-four tubs or vats, twelve in each row, each of which vats is set in beton cement, has a half circular bottom, and is furnished with a fly wheel with wooden arms or paddles for accelerating the tanning of the skins. Running half the length of one of the above mentioned rows of vats are five cylindrical vats destined to the same use, and adjoining these, two tubs which revolve." "These tubs are "intended to wash the cowhair, flock, size, and wools" by means of a four-armed paddle wheel placed in each of them. "There is also another fulling vat intended, firstly, to full the dry leather of country or foreign skins, which after soaking for two or three days are placed in this vat, where they turn, heat, and soften during several hours according to their quality, an operation generally requiring several processes, and as many days. When the fulling of the skins is nearly effected, a little water is introduced," by which means the primitive suppleness of the hides is restored. The fulling vat is also used to purge and cleanse the hides after fleshing. In this case they are fullled like the dry hides, but with a greater quantity of water. "The lime and the dirt come off the hides and disappear in the dirty water let off from the vat through an orifice at the bottom, and which is replaced by clear water from an upper conduit. After this operation

“skins are remarkably clean, more so than by the usual river work. The whole of the apparatus above mentioned is set in motion by an hydraulic wheel or other motor in connection with bands, pulleys, and other gearing.” In a small adjacent building are four basins or pits. Two of these adjoin each other, and are intended for river work. One is of the usual description, the other is made with a rounded bottom, and “is fed by a stream of water from an upper level, which turns with rapidity on meeting a rounded bottom, and keeping the water in constant agitation, presents advantages over the old system. The other two basins serve as in the old method for steeping and peeling the hides by the aid of slack lime. The workman may with a small lever and without trouble direct upon these a greater or lesser stream of water carrying off all dirt, and keeping up a constant cleanliness.”

[Printed, 10*d*. Drawing.]

A.D. 1860, May 9.—N^o 1142.

KEMP, HENRY.—“Improvements in preserving wood, leather, iron, and other substances.” This invention consists “in the application of peat tar and peat oil, or a combination of peat tar and peat oil, and wood tar (meaning thereby one of the products of the destructive distillation of wood in close vessels) mixed with sulphuric acid, methylated spirits, vegetable naphtha, arsenic, sulphate of iron, rosin, carburet of iron and oil, or any one or more of these articles to the preservation of wood, leather, iron, and other substances from decay or corrosion.” For the preservation of leather, one proportion of peat tar with two proportions of wood tar is used, together with sulphate of iron and rosin and methylated spirits, and sometimes a small proportion of sulphuric acid. The composition may be brushed on, or a slight pressure may be employed for injecting it, using it in a heated state.

[Printed, 4*d*. No Drawings.]

A.D. 1860, June 14.—N^o 1454.

HENRY, MICHAEL.—(*A communication from Louis Henry Obert, Jean Baptiste Vasseur, and Auguste Houbigant.*)—“Improvements in treating vegetable substances so as to obtain pulp and other useful products therefrom.” This invention, so far as it relates to leather, consists in the extraction of tanning and colouring

matters from vegetable substances while being worked into pulp for the manufacture of paper. The vegetable substances are crushed and then soaked in hot liquid with carbonates or salts of soda, potassa, or lime, combined or not, and while being soaked may be beaten, stripped, and drawn out. They are then submitted, after being distilled, to an operation of beating, stripping, and drawing out, in a closed boiler or receiver. "During distillation, alcohols, essential oils, and other products of distillation derivable from the substances are given off, and are received and condensed in a series of vessels or receivers. After distillation the substances under treatment are subjected to a boiling or hot treatment (quite); the temperature or nature of the bath employed may be more or less concentrated in salts of soda or alkalies, according to the plants under treatment. The liquid used in the foregoing operation is conveyed into the soaking vessel until sufficiently concentrated by the distribution of the action of soaking, distilling, and boiling, and is then collected to obtain therefrom the feculous, colouring, saponaceous, and tanning matters which it may contain."

[Printed, 1s. Drawing.]

A.D. 1860, June 25.—N° 1539.

DINSMORE, DAVID CROSMAN.—"Improvements in machinery for splitting leather and cutting the heels of boots and shoes. The first part of the invention consists in making the rollers between which the leather passes "wholly or in part of india-rubber, gutta percha, or a compound of the two, or any other pliable material" which will yield to the inequalities of the hide to be cut, and "thus bear equally on all portions of the hide, whether thick or thin." The cutter used is formed in one piece with the two "edges set either at right angles to each other, yet they may be formed either acute or obtuse as the case may require. Thus the leather may be cut to any width and thickness at the same time bevelled for welts and such like."

The second part of the invention consists in machinery for cutting the heels of boots and shoes. The knife used is of a horse-shoe shape hinged at the centre. This knife is secured to a plate or frame, the upper part of which is a semi-sphere and fits in a cup made for its reception in a horizontal cross piece (apparently). The cross piece is mounted on vertical rods

with helical springs round each, and can be pressed down on to the leather to be cut by means of a pedal. Turnbuckles are attached to the back and sides of the knife. As the knife descends it is caused by the action of the turnbuckles to expand slightly and to move from an "inclined position into the horizontal," thus giving the heel to be cut a curve all round.

[Printed, *sd.* Drawing.]

A.D. 1860, July 14.—N° 1708.

NEWTON, WILLIAM EDWARD.—(*A communication from Samuel La Forge, Joseph Merwin, John Evans Bray, and Asa Goodell Prask.*)—"An improved manufacture of waterproof leather." The patentee says:—"In carrying out the invention the skin of an animal from which 'upper leather' is usually made, must be taken after it has gone through the tanning process; but previous to its being put through the dressing process, and after having exposed it to a sufficient degree of heat to drive off its fluid particles, it must be coated with a solution or compound of india-rubber or gutta percha charged with sulphur. The skin must then be subjected to the usual vulcanising process, and the product will be a pliable, soft, and perfectly water-impervious article, glossy, and in every respect equal to japanned leather, without its liability to crack."

[Printed, *4d.* No Drawings.]

A.D. 1860, August 25.—N° 2053.

NEWTON, ALFRED VINCENT.—(*A communication from A. D. Lafkin.*)—"An improved mode of treating hides and skins preparatory to the tanning process." The invention "relates to a mode of depilating hides and skins preparatory to tanning by the use of which the hair is not only removed in a shorter time than by the usual liming process, but the skins when unhaired in this way will be left in a soft and natural condition, requiring only washing in water and the usual working upon the beam (the common method of bating being entirely unnecessary) to make them ready for the tan liquor. To this end a compound of sulphur (S) soda ash (NaO), and lime (CaO), is first prepared in the following manner:—take equal quantities by weight of sulphur and soda ash, triturate them thoroughly together, then add water enough to reduce them to a thin plastic mass, continuing the triturating with a hoe or

“ some suitable tool until the two ingredients are fully mixed and united, producing a sensible degree of heat by their chemical union; then take ten times the quantity by weight of quicklime, that is, if one pound of sulphur and one of soda ash is used, take ten pounds of quicklime and slake it in the usual way, adding water thereto till it can be easily worked. While the lime is hot add to it the sulphur and soda prepared as above, and work and mix the whole so completely together that it will form a perfectly homogeneous pasty mass of a bright straw color. The mixing should be so thorough that the combination will be complete. The exact proportions herein given are not essential, but may be varied according to the purity and strength of the ingredients used. If it is preferred, the soda ash can first be dissolved in water and the sulphur added to this solution stirring it continually till the sulphur is dissolved.” For use the material is mixed with a large proportion of water. Other forms of caustic alkali than soda ash can be used.

[Printed, 4d. No Drawings.]

A.D. 1860, August 31.—N° 2108.

NEWTON, WILLIAM EDWARD.—(*A communication from C. L. Robinson and T. G. Eggleston.*)—The invention “consists in the employment, in combination with terra japonica (also called catechu and cutch) as the tanning agent, of sulphuric acid for the purpose of removing certain injurious impurities in the catechu; carbonate, sulphate, or calcined magnesia and sulphate of potassa are also added and employed as plumping and alterant agents.” Methods of making two terra japonica tanning liquors, called respectively No. 1 and No. 2, are described. For No. 1, about one hundred and twelve gallons of water are placed in a kettle over a fire, and fifteen pounds of terra japonica are added and dissolved in the hot water. Three ounces of sulphuric acid are then added. It being dangerous to pour strong sulphuric acid into hot water, the liquor should either be allowed to cool before the sulphuric acid is put in, or the acid should be greatly diluted. The liquor is next boiled, and the froth which rises to the surface in boiling is skimmed off. After this the liquor is poured into a large tank and allowed to cool, when a sediment consisting of insoluble impurities injurious to leather, will form at the bottom. The clear liquor is racked off into a vat.

For making liquor No. 2, about a fourth of an ounce of dissolved carbonate or calcined magnesia and a sixteenth of an ounce of sulphate of potassa are added to liquor No. 1; about as much water as will reduce the liquor to half its strength is then added.

For tanning upper leather the hides are put in liquor No. 2, a considerable quantity of liquor No. 1 and one ounce of sulphate of magnesia being added every second day during the early part of the process. The patentee adds that the sulphate of magnesia is for plumping the hides, and that the amount to be added must be determined by inspection. For tanning calf, sheep, and other skins and furs, a weaker liquor is used. For such leather as harness and sole leather, the same liquor is used as for upper leathers, two ounces of sulphate of potassa being added to the first liquor the hides receive, for the purpose of giving hardness and firmness to the leather.

[Printed, *4d.* No Drawings.]

A.D. 1860, September 7.—N^o 2162.

STEVENS, CHARLES.—(*A communication from Antoine Bouet.*)—"An improved impermeable oil varnish." The varnish to which this invention relates is composed "of 100 parts of alcohol, "100 parts of spirits of turpentine, 1 part of sulphuric ether, and "1 part of carbonate of soda." The varnish gives a brilliant polish to shoes, "and is applicable to all kinds of leather of any "nature or colour."

[Printed, *4d.* No Drawings.]

A.D. 1860, September 11.—N^o 2198.

COOPMAN, GILBERT LUCIEN PIERRE.—"New means and "processes of tanning hides and skins by which a graduated "impermeability of leather is obtained." The patentee says:—"My invention relates to the use of the sea onion or sea squill "for tanning purposes, which contains about 35 per cent. of "tanning matter, and about 30 per cent. of gummy or fatty "matter. I use in tanning instead of the ordinary bark tan, the "skins or coats of the sea squill, the outer thin coats, which are "dry and of a red tint, containing the greatest amount of tannin "and coloring matter. The next inner coats are thicker and "contain a certain quantity of tannin, but they lose con- "siderably in weight in drying. The middle layers or coats are

“ white and glutinous, and contain a gummy matter, which
“ being an irritant prevents the too rapid combination of the
“ tannin with the skin, and thus prevents the leather from
“ burning. This gummy or mucilaginous matter in consequence of the unctuous or fatty matter it also contains
“ renders the hide impervious on its application thereto. By
“ thus stripping or separating the bulb of the sea squill I am
“ enabled by using a large quantity of the outer skins to effect
“ the tanning operation with great rapidity, while if I would proceed by a slower process, I mix the outer coats with intermediate
“ ones, and further to render leather impervious moderate the action of the tannin, and at the same time to act as an irritant
“ on the hide, I employ the white glutinous layers containing the
“ fatty and gummy matters ; for this purpose the proportions of
“ the tanning matters are arranged accordingly as it is required
“ to effect the tanning with more or less rapidity, or to render
“ the leather more or less impervious.”

“ The splitting or separation of the bulbs of the sea squill may
“ be effected either by hand or by means of a root cutter, which
“ reduces them to strips more or less fine, and then reduces them
“ to powder by means of a crusher. I use the layers of the
“ squill either whole or subdivided after having dried them in
“ the sun in a dry place suitably prepared for the purpose, only
“ drying them (always cut up into strips) in a stove at a moderate
“ heat, care being taken to preserve them in either from damp of
“ the ground or atmosphere, and having reduced them to powder
“ I use them instead of bark. I also obtain tanning juices from
“ these layers by means of ordinary processes for obtaining such
“ concentration. My improved process does not interfere with
“ the washing and vatting operations, but care should be taken
“ that the skins do not contain the smallest quantity of lime, and
“ that the tanning operations be effected partly under cover. I
“ effect the tanning generally in wooden vats and resort to
“ agitation by suitable means.”

The patentee also states that in tanning hides with the squill the tannin is obtained chiefly from the first or outside coats and distension is caused by the glutinous layers. The leather is rendered more or less impervious according as more or less of the glutinous layers is used. These may slightly retard the tanning, but produce considerable weight in the leather. Bark may be added to the tanning materials when the hides are half tanned.

A small quantity of potash should be applied after the second operation has taken place.

[Printed, 4d. No Drawings.]

A.D. 1860, September 15.—N° 2249.

BARNWELL, STEPHEN, and ROLLASON, ALEXANDER.—This invention relates to improvements in combining pyroxylene with other substances for producing various compounds, and using the compounds when in a state of solution as paint or varnish. It consists in dissolving pyroxylene in any of its known solvents, and adding thereto oils, animal, vegetable, or mineral. To this solution are added “gums or resins, and also oxidisable salts, such as oxide of manganese or oxide of copper, as colouring agents.” Other mineral substances, such as chloride of calcyum and iodide of cadmium, are useful when articles of an unflammable nature are to be produced. “Animal matters in the shape of glue, gelatine, or wool flock” are also useful for strengthening the compound. This compound in a solid state is applicable to the manufacture of numerous articles; but when in a state of solution it may be used as a vehicle for pigments, and a varnish for boots, shoes or leather of any description.

[Printed, 6d. No Drawings.]

A.D. 1860, September 25.—N° 2324.

VAVASSEUR, JOSIAH.—“Improvements in machinery for rolling or polishing leather.” The patentee says:—“My invention consists of a carriage which is provided with roller or rollers for rolling or polishing the butt or hide, being travelled to-and-fro in a longitudinal direction over a table on which the butt or hide is placed, by means of a rope of steel or iron wire, or hemp, or leather, or by means of a chain or band directly attached to each end of the carriage. Over the table supported on suitable standards is a guide frame resembling an inverted lathe bed forming a guide in which can travel the carriage. The rope, chain, or band attached as before stated to the carriage is passed round the entire or partial circumference of a pulley or drum situated at each extremity of the machine and attached thereto by suitable framework, so that it forms, in connexion with the travelling carriage, an endless rope, chain,

" or band. The requisite tension is given to this rope, chain, or
 " band by means of of a guide or pressure pulley placed beneath
 " the framework of the machine, and so constructed that it may
 " be raised and lowered between two sliding cheeks." "The
 " peculiarity of my travelling or traversing carriage may be thus
 " explained. Instead of being pressed down loaded or weighted
 " by weights placed in a box directly over the carriage as hitherto
 " done, a series of levers or links receive the required pressure by
 " a weight applied at the extremity of a lever placed horizontally
 " above the carriage. The object of this is to enable the weight
 " to yield in case any foreign object or substance should present
 " itself beneath the roller, as well as to render the butt or hide of
 " an uniform texture throughout. The pressure produced by
 " the combination of levers or links and weight as described may
 " also be produced by means of a spring or springs acting on the
 " one part against the under side of the guide frame and on the
 " other against the travelling or traversing carriage; or it may
 " be produced by means of india-rubber or a similar elastic sub-
 " stance, or by a combination of levers or links and weight with
 " springs, or india-rubber, or other elastic substance, provided
 " that in all cases each roller is acted upon independently and is
 " allowed to move vertically and sideways, so that it will press
 " with an equal or nearly equal pressure over the whole surface
 " of the butt or hide."

The reversing of the motion of the carriage so as to drive it
 to-and-fro over the hide is thus accomplished. Small brackets
 attached to one of the guide frames support a bar or rod. To the
 carriage are fixed "two little lugs or snugs, which after the termi-
 " nation of the motion of the said carriage in either direction,
 " come into contact with corresponding screwed snugs or nuts
 " which are placed on the bar," "and shift the same either
 " forwards or backwards." One end of the bar is connected
 by means of a link to a bell crank, which being moved acts on a
 sliding bar "for displacing the strap driving the machine from
 " one pulley to another." The series of pulleys is stated to be
 similar to those used for the tables of planing machines.

[Printed, &c. Drawing.]

A.D. 1860, October 22.—N° 2572.

DIETZ, ANDREW.—"A new and useful method of treating
 " skins and hides during or after the process of tanning or

“finishing them, and of aiding the tanning of hides and skins.” The method is best used during the last stages of the tanning process or during currying, and is then as follows:—“After the skin is taken from the tanning liquors it is hung up to drain and partially to dry, and when about two-thirds dry is spread upon any suitable table or platform, and is then covered and rubbed with honey mixed with water in about the proportion of four ounces of honey to a half pint of water. It is deemed preferable that this should be applied to the grained surface of the skin after it is shaved and scoured and before it has been stuffed; but it may be applied to the other side, or to both sides and at any time. The skin is then hung up to dry, and when dry is ready for the currying.” When the process is applied to leather already tanned the leather is first soaked in water sufficiently to swell and loosen the tissues. The qualities given to the leather by the process are stated to be softness and pliability.

[Printed, 4d. No Drawings.]

A.D. 1860, October 22.—N^o 2573.

DIETZ, ANDREW.—“An improved process or method for tanning skins, hides, &c., and converting them into leather.” The invention consists “in swelling the tissues of the skin previous to and during the process of tanning by the use of saline liquors,” and in using in connection with these tannic liquors of different and increasing strength. The patentee says:—“With any tannic substance I make a weak liquor two or three degrees as measured by the barkometer, and in such liquor I put salt and alum separate or together in about the proportion of two ounces to the gallon, and stir and mix the whole well together. In this liquor the skin is first immersed and frequently handled or stirred. The strength of the tannic properties of the liquor is to be increased from three to four degrees per day, and such increase may be made at three or four different times, and in proportional degrees or parts, and as often as so increased the skin is to be well stirred and handled. The length of time during which the skins are to be continued in such liquors will of course vary according to their thickness.” “For the heavier skins also the strength of the tannic liquors may be somewhat greater, and for such skins the strength of the tannic liquor need not be increased so frequently during a day, but such increase need

“ be made but once a day.” It is stated that by following the patented process “ the outer surfaces of the skin are not as in “ the ordinary methods of tanning tanned most rapidly, and “ thereby the pores partially or mostly closed before the inner “ parts of the skin are changed into leather, but the inner parts “ of the skin are reached by each liquor, such liquors appearing “ to act upon the principle of displacement, and are charged with “ the tannic acid, and thus tanned as rapidly or nearly so as the “ outer surfaces.”

[Printed, *4d.* No Drawings.]

A.D. 1860, November 6.—N° 2732.

SALISBURY, EDWARD.—(*Letters Patent void for want of Final Specification.*)—“ An improved mixture or solution to be applied “ to pickers, picking bands, straps, sole leather, and such like “ materials, in order to harden them and render them more “ lasting.”

The solution is composed as follows :—“ A quantity of lime is “ dissolved or mixed in about twenty times its weight of urine ; “ the soluble portion is then drained off and mixed with about “ an equal quantity of oil.” The materials to be operated upon stand some days in the mixture.

[Printed, *4d.* No Drawings.]

A.D. 1860, November 28.—N° 2925.

HOLMES, THOMAS.—(*Letters Patent void for want of Final Specification.*)—“ Improvements in preparing and in tanning “ hides and skins.” “ This invention has for its object improve- “ ments in preparing and in tanning hides and skins. For these “ purposes when softening hides and skins, in place of using “ stocks a barrel or cylinder is used, in the interior of which “ there are on the circumference numerous pegs or projections, “ each a few inches long pointing towards the centre. The “ barrel or cylinder is arranged to rotate on suitable axes at the “ ends, and it is preferred that the barrel or cylinder should be “ about nine feet diameter, and a few feet in length, but these “ dimensions may be varied.”

[Printed, *4d.* No Drawings.]

A.D. 1860, December 5.—N^o 2986.

GORRILL, BENJAMIN.—(*Provisional protection only.*)—"Certain improvements in the making of gilding tools for gilding or embossing ornaments on leather or other surfaces." In the manufacture of tools used in embossing leather it has been the practice to form the design by the process of die-sinking, which is a tedious process. These improvements consist in making the ornaments by the process known as saw-piercing, "namely, the taking of a flat piece of metal, sufficiently thick as may be required consistent with the size of the ornament," and drawing on its surface the required design. The external and intermediate portions of metal requiring to be removed are removed by saw-piercing. The design so formed is pinned or screwed on to a solid block, and the face of the design is finished by the ordinary process of engraving.

[Printed, 4d. No Drawings.]

A.D. 1860, December 11.—N^o 3035.

STEVENS, CHARLES.—(*A communication from J. Chapa and Laçaze.*)—(*Provisional protection only.*)—The inventor says:—

"The object of the present invention is to preserve leather by means of a chemical preparation from humidity and the action of acids, and is especially applicable to leather used in the manufacture of bellows for throwing sulphur on vines attacked by or menaced with the vine disease. To effect this two coatings composed of the following ingredients are used:—

"1st coating. India-rubber dissolved in sulphuret of carbon to saturation. It must be dissolved in a bottle or other suitable receptacle closed with a glass stopper.

"2nd coating. Gutta percha dissolved in a solution of sulphuret of carbon to saturation; likewise dissolved in a flask or other receptacle closed as before with a glass stopper.

"The leather to be operated on is stretched on a board, and receives one or two coats (according to the degree of strength intended to be given) of the 1st coating which is laid on with a brush. The sulphuret of carbon then evaporates, leaving the india-rubber adherent to the leather in its natural condition.

"When this operation is completed the leather receives a coat of the 2nd composition above described laid on over the first coat with another brush. This second coating adheres firmly

“ to the india-rubber and protects it from the heat of the sun.
 “ These two compositions may be employed separately or together,
 “ and the matters used must be as pure as possible.”

[Printed, 4d. No Drawings.]

A.D. 1860, December 11.—N° 3044.

STUART, JAMES.—(*Provisional protection only.*)—“ Improve-
 “ ments in treating skins for the manufacture of leather.” The
 inventor says :—“ In place of subjecting skins after they have
 “ been unhaired to the action of a bath prepared from pigeons’
 “ and dogs’ dung, as has heretofore been practised, a preparation
 “ or product obtained from fish by heat is employed, in which
 “ the unhaired skins are soaked for a suitable length of time.
 “ The preparation or product of fish is best obtained by digesting
 “ fish with water in a closed vessel, until the fish is reduced for
 “ the most part into a fluid state, and this product is then used
 “ as above explained, after which the skins are tanned or treated
 “ in like manner to that in which they have been treated or
 “ tanned after the use of the bath prepared from pigeon or dogs’
 “ dung.”

[Printed, 4d. No Drawings.]

A.D. 1860, December 12.—N° 3056.

PITT, ROBERT, and COX, STEPHEN FITCHER.—(*Provisional
 protection only.*)—“ Improvements in apparatus employed in the
 “ manufacture of leather.” The inventors say :—“ In the manu-
 “ facture of leather it is common to submit the hide or skin to
 “ the action of a roller, having screw threads or worms fixed on
 “ its periphery; the roller is pressed firmly against the hide or
 “ skin by a pressing surface, usually another roller.” “ In such
 “ machines, however, we have found that the hide or skin is
 “ liable to be drawn forward by the screw roller at a greater speed
 “ than that at which the pressing roller or surface is set to travel,
 “ the hide or skin slipping on the said surface, and defective
 “ work is thus produced. In some cases, however, the hides or
 “ skins have been fixed to the lower rollers by means of grooves
 “ and wedges, by which the outer edges of the hides or skins
 “ have been absolutely fixed and incapable of movement, except
 “ with the lower rollers; this mode of holding skins and hides
 “ has been found objectionable. To prevent the hides or skins

“ (when not fixed near their outer edges to the roller) being drawn forward by the screw roller, we employ another roller which holds the hide or skin against the pressing roller or surface, and thus retains it securely; this roller may either be a complete roller extending from side to side of the machine, or it may be composed of a series of discs or short rollers mounted at distances apart on the axis. Or in place of this arrangement, a hide or skin may be caused to be held by, and to pass between, a pair of feed rollers before passing under the screw roller, the said feed rollers being so driven that their surface speed may be that at which it is desired that the hide or skin shall pass forward.” “In constructing the spiral or screw formed thread on the upper roller, we have found that it is very important that the material used should be very hard, and that the acting surface should be very close in texture, and capable of presenting a very smooth or polished surface, and we have found by experiment that such spiral or screw thread may with advantage be made by casting them of iron on chills, also of wrought iron, case or surface hardened, also of hardened steel, and also of hardened steel fixed or united to iron.”

[Printed, 4d. No Drawings.]

A.D. 1860, December 19.—N^o 3121.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from J. D. Duhoussett and P. E. Thomas.*)—“Improvements in the treatment of caoutchouc, and the employment of a product obtained thereby for lubricating and coating bodies.” “This invention consists, first, in heating caoutchouc to a high temperature in a closed vessel, and thereby extracting from it or converting it into a viscous semifluid substance, which the inventor denominates “hévéone,” and which is suitable for being employed either pure or mixed with fatty or other matters as a lubricator, or for coating metals, wood, and other substances.” The caoutchouc may be heated either in a vessel hermetically sealed with an internal agitator working through a tight stuffing box and heated by steam, or in a bath of heated oil or molten metal; or the process may be conducted in a distilling apparatus, the lower portion of which is heated in any way above mentioned, while the coil or serpentine is refrigerated by spring or well water or other means. The heat to which it is

desirable to submit the caoutchouc varies from 250 to 460 degrees Fahrenheit. When used as a waterproof coating the "hévéone" is mixed with an equal quantity of oil.

[Printed, 4d. No Drawings.]

1861.

A.D. 1861, January 8.—N° 46.

RATTRAY, WILLIAM.—"Improvements in preserving organic substances." This invention consists, first, in a mode of preserving animal and vegetable matters by impregnating them with an aqueous solution of sulphurous acid. The materials to be preserved are suspended in a water tight vessel, and a series of solutions of sulphurous acid increasing in strength are successively applied to them. The invention also consists in the use of the alkaline and earthy sulphites in packing animal or vegetable matters which have been previously preserved in the manner first described. The sulphites either dry or in solution are introduced into the cases in which the preserved animal matter is packed. In treating raw hides, they are plunged or suspended in a solution of sulphurous acid of the strength indicated by six degrees on Twaddell's hydrometer, diluted with twenty parts of water. After being drained they are powdered with a dry sulphite, sulphite of lime either alone or mixed with dry sulphite of alumina being preferred. The hides are then folded in bundles with the flesh side inwards.

[Printed, 4d. No Drawings.]

A.D. 1861, January 10.—N° 65.

JOHNSON, JOHN HENRY.—(*A communication from Samuel Dunsmith.*)—(*Provisional protection only.*)—"Improvements in tanning hides and skins." "The hides or skins with or without the hair on them" are submitted "to a tan liquor, composed of about one gallon of strong decoction of the anthemis cotula (*Lumens maruta cotula* of modern botanists); to this is added about a quarter of a pound of catechu or terra japonica, two ounces of alum, and two ounces of common salt." The whole having been stirred together, the hides or skins are immersed therein, "in the same condition that they come from the

“ ‘beam.’ ” The skins should be frequently stirred and handled. If desired, terra japonica may be used without the maruta, in about the following proportions:—Twelve pounds of terra japonica to fifteen gallons of soft water, to which are added one and three-quarter pounds of alum, and one and a half pounds of common salt; but the first mentioned ingredients and proportions are preferred, as a finer color of leather is thereby obtained.”

“ When skins are tanned without first removing the hair, it is proposed to prepare them for the tan by first soaking them in water till they are soft and pliable, and then working them off on the flesh side. When skins are prepared in the lime vat, instead of using a ‘bate vat’ (composed of a solution of henedung) for neutralizing the lime, the following preparation may be used in which the skins are to be soaked:—To thirty gallons of soft water add one pound of common sulphuric acid, six pounds of common salt, and one bushel of wheat bran; these ingredients, which may be varied slightly, should be well stirred together, so as to mix them thoroughly. The skins should then be taken out of the preparation and worked off on the beam in the usual manner, when they will be ready for the tan liquor herein-before described.”

[Printed, 4*l*. No Drawings.]

A.D. 1861, January 17.—N^o 136.

JULLIEN, EDOUARD.—“ Improvements in machinery for preparing and treating hides and skins in the manufacture of leather.” A large cast-iron roller covered with caoutchouc is used. The roller is caused to revolve on its axis, and gives motion to three pressing cylinders by means of teeth placed on the roller working in pinions on the axes of the pressing cylinders. The pressing cylinders press against a portion of the upper hemisphere of the roller. There are three “working cylinders.” The first of these is between the first, *i.e.*, the highest pressing cylinder and the second, and is covered with helicoidal plates of steel or other material. The second cylinder is between the second and third pressing cylinder, and is furnished with seven sets of three straight blades of steel or brass.” The third cylinder is next to the third pressing cylinder, and is furnished with twelve blades of slate. These cylinders are driven at a

greater surface speed than the iron roller. The skin is introduced between the first pressing cylinder and the iron roller, and being carried round by the action of the machine is pressed, spread, fleached, and grained by the various cylinders. Another kind of cylinder is described which may be used if required. It is fitted with curved blades of steel, or other material.

[Printed, 8d. Drawing.]

A.D. 1861, January 24.—N° 198.

VERO, JAMES.—“Improvements in machinery for separating the fur or hair from the skins of animals.” By means of this invention the fur or hair may be removed from the skins without any chemical process and without injury to the skin. By means of a connecting rod and lever attached to a treddle, the roller on which the skin is stretched is moved forward a certain distance at every downward pressure of the treddle. The treddle when released moves upwards by means of weights, but the roller is retained from moving back by clicks. The downward motion of the treddle, acting upon a lever causes the pressing bar to descend on the skins so as to nip or hold the fibres to be cut, so that the pressure of the knife may not push them aside. As the bar holds the fibres the workman inserts the knife with its back to the bar and forces it across the skin. The treddle is then released, and the bar rises. On the treddle being again depressed the skin is moved the breadth of a cut forward, the bar descends, and the cut takes place. The hair cut off is received on an endless apron, and moved away.

[Printed, 10d. Drawings.]

A.D. 1861, February 1.—N° 271.

DE ARRIETA, JOSÉ JOAQUIN.—“Certain applications of chapapote and its products, and of the same combined with other substances, and of materials treated therewith to various purposes in manufactures and the useful arts.” This invention relates to the use of “a certain natural matter called in Cuba chapapote, whether in its concrete (solid) or its viscous, pasty, or more or less fluid condition, and whether alone or combined with other substances.” This “chapapote” is sometimes called by different names, and is found elsewhere than in Cuba. It is applied to wood, leather, &c. to preserve them from wear, damp,

injury, or decay. The chapapote is used in combination with lime, burnt or dried clay, powdered pitch, and argillaceous, aluminous, silicious, or earthy substances; wax, turpentine, gutta percha, caoutchouc, resins, gum resins, fatty matters, alcohol, wood spirit, hydrocarbons, varnishes and other matters. A mixture of chapapote with tar or oil may be used "for coating and saturating felted or textile fabrics previously saturated with oil, tar, or not (but preferably so saturated)."

[Printed, 6d. No Drawings.]

A.D. 1861, February 6.—N° 309.

CLARK, WILLIAM.—(*A communication from Camille Guillaume Michel Magneval.*)—"Improvements in preserving animal substances." The invention consists in a method of preserving animal substances by the employment of talc and "of any other inorganic matters of insoluble nature, or of argillaceous earths serving as ceramic bodies, or sulphate of baryta, carbonate of lime, and others." These substances are used in the shape of powder. The patentee says:—"In the treatment for preservation of animal substances, I may proceed by employing for example:—First, common salt (chloride of sodium) or sugar, or both. Secondly, salt, sprinkled with vinegar. Thirdly, talc, or other substance above-named, that would imbibe the vinegar resulting from the distillation of wood, or it may be other strong vinegar in an acid state rectified, and weighing for example 1·010, which has been previously mixed with salt, or mixed with either one or other of the before-mentioned substances, for instance, mixed with talc powdered and used in a state of paste."

"This treatment is also applicable for the preservation of hides by sprinkling them with talc, or other absorbent powders on the inside, and in cases of great heat they are sprinkled also on the opposite side. Hides of all animals are preserved by sprinkling them uniformly with talc or other powders of inorganic matters of an absorbent and insoluble nature; alum, for example, in a neutral state in solution, or in a state of powder, or by forming a paste with talc or other inorganic matters, and strong vinegar or pyroligneous acid rectified or not." The substances after having been covered with powder, should be exposed to the action of a strong current of air to hasten desiccation.

[Printed, 4d. No Drawings.]

A.D. 1861, March 14.—No 640.

MÉNARD, AUGUSTIN FRANÇOIS. — (*A communication from Yves Auguste Robt.*) — (*Provisional protection only.*) — "The inventor says:— 'This invention relates to a new and rapid system of tanning leather of every kind, and consists, first, in the use of bark in bundles, instead of being reduced to powder, as in the ordinary method.'"

"Secondly, the peculiar arrangement of the apparatus to be employed."

"Thirdly, the employment of carbonic acid and other gas, whether the tanning is performed in a vacuum by hydrostatic pressure, or by the old method."

"Fourthly, the mode of operating upon the skins in the vats by the injection of various gases combined with electric and galvanic currents to effect the rapid tanning of the leather."

"Fifthly, placing the skins in calcareous, magnesian, aluminous, silicious, or ferruginous solutions, in which is injected various gases in combination with an electric and galvanic current for the formation of substances required in tanning."

"Sixthly, in the mode described for constantly preserving the strength of the tannin solution at any temperature or condition of the atmosphere, and preventing the formation of gallic acid by means of carbonic acid."

"Seventhly, the application of carbonic acid and other compounds of carbon to form chemical compounds with the mineral substances herein-after described."

"Eighthly, in rendering leather more pliable and more impermeable to water by the saponification of fatty matters with sulphurets of carbon." The unhairing is effected by jets of steam or gas."

For the mode of tanning described a stream of tanning solutions fills a series of vats or pits are arranged in a circle, or in two parallel rows, all the vats or pits being connected together. Bundles of bark are placed in one vat immersed there a short time, then taken out and placed in another vat, and so on until the bark has been immersed in each vat of the first half of the series. Fresh bark is then placed in the vat first used and a graduated strength of tanning liquor is obtained through the whole series, increasing in strength up to the vat first used, and decreasing after that one. The vats of the latter half of the series, are

furnished with false bottoms pierced with holes. Under these false bottoms is a pipe which conveys carbonic acid gas into the vats for the purpose of preventing decomposition of the tannin solutions. In four of these vats are solutions of lime, phosphate of lime, barytes, alumina, or magnesia. Through these vats an electric or galvanic current is passed.

[Printed, 4d. No Drawings.]

A.D. 1861, March 22.—N° 722.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Adrien Jacques Basset.*)—(*Provisional protection only.*)—"Improved means of coloring enamelled leather, leather cloth, enamelled metal, and other enamelled surfaces." "This invention consists in coloring enamelled leather and other enamelled surfaces in manner hereafter described:—1st, spread over the surface with a sponge or soft rubber a mordant, such as benzole, or preferably pure acetic acid; 2nd, apply a mixture of aniline, red or violet, and acetic acid in the proportion of about one quarter or one half of the acid to three quarters to one half of aniline. This preparation will impart a greenish color or tint to the enamelled surface, and to increase the brilliancy of the color spread a coating of linseed oil over it. In order to change the greenish tint into the color of gilt bronze (bronze doré) apply one, two, or more coats of acetic acid."

[Printed, 4d. No Drawings.]

A.D. 1861, April 25.—N° 1035.

HARRIS, WILLIAM.—The patentee says:—"This invention has for its object improvements in treating hides and skins to render them suitable to be made into straps for driving machinery, and to be used for other purposes for which leather is commonly employed. For this purpose the hide or skin is in the first place unhaired and otherwise prepared as is usual previous to tanning, and it is dried more or less completely; it is then immersed in a bath of milk and soaked therein until the milk has thoroughly penetrated," which will be in about 80 to 100 hours; the hide or skin is afterwards removed from the milk bath and when drained is placed in a bath containing tar in which it is kept until the desired effect is produced. I prefer that the tar bath should consist wholly of Stockholm tar and the time necessary for producing the effect

" will usually be from 230 to 240 hours. The hide or skin is then removed from the bath, and the tar carefully scraped off " and the hide or skin is then dried, and dressed as usual. " In some cases in place of employing only milk and tar in the process I employ in addition meal made from cereals, and in some cases also a little ammonia." The patentee states, however, that he doubts whether the ammonia serves any useful purpose, and further states that in some cases he employs the serum of blood as a substitute for milk " a mixture one-half fresh blood and the other half water being employed in place of milk in making the bath."

[Printed, 4d. No Drawings.]

A.D. 1861, April 30.—N° 1079. (* *)

MEYER, JACQUES.—(*A communication from Francis Leopold Sonnenschein.*)—" Certain new chemical combinations and for the application thereof to fixing aniline and pigment colours, in printing and dyeing, to tanning, waterproofing, and other industrial purposes."

The invention consists in the combination of certain organic substances, such as albumen, fibrin glue, animal tissues, &c., with the oxides or salts of tungsten and molybdenum. When used for fixing aniline and pigment colours they may be precipitated on the fabric along with the colours, or the fabric may be previously impregnated with a solution of salt of tungsten or molybdenum and printed afterwards with colours containing the organic substances above referred to. In waterproofing fabrics and other materials, the compounds must be of greater strength than in fixing colours. In tanning or preparing hides or skins " they are operated upon by the oxides or salts of tungsten or molybdenum, and converted into a material possessing the properties and uses of leather," being alternately dissolved in solutions of these substances, and in muriatic acid.

[Printed, 4d. No Drawings.]

A.D. 1861, June 10.—N° 1481.

STEART, JAMES.—" Improvements in treating skins for the manufacture of leather." The invention consists in subjecting the skins after they have been unhaired to a product obtained from fish by heat, instead of submitting them to the ordinary bath

prepared from pigeon and dogs' dung. The product of fish "is
 " best obtained by digesting fish with water in a closed vessel
 " until the fish is reduced, for the most part, into a fluid state."
 The method of doing this is thus described by the patentee :—
 " The manner in which I prefer to treat fish is to digest it in a
 " suitable closed vessel. Into this vessel I place the fish, and by
 " means of a coiled perforated pipe at the bottom I freely admit
 " steam of a very low pressure, in order to prevent the fish in the
 " vessel being raised to a greater temperature than about 212°
 " Fahrenheit, and in this manner I digest the fish three or four
 " hours. The fish is then taken out of the digesting vessel,
 " together with the water resulting from the steam, and also any
 " fluid which may come from fish, and I place the whole in
 " another vessel, and allow the same to stand for many days
 " [generally from 14 to 28 days] till the larger proportion has
 " become fluid; this fluid is separated from the other parts by a
 " sieve, and the fluid thus or otherwise obtained is that which
 " is to be used according to my invention in place of pigeon
 " or dogs' dung, and such fluid product of fish is to be used with
 " water in like manner to that in which pigeons' and dogs'
 " dung have heretofore been used."

[Printed, 4d. No Drawings.]

A.D. 1861, June 11.—N° 1489.

STEVENS, CHARLES.—(*A communication from Joseph Chapa and Ernest Lacaze.*)—"An improved impermeable varnish for
 " leather." This varnish is applied in two coatings. The first
 coating, consists of one hundred parts of india-rubber and four
 hundred parts of sulphuret of carbon mixed in a closed vessel.
 The second consists of one hundred parts of gutta percha
 dissolved in four hundred parts of sulphuret of carbon. The
 coatings are applied successively with a brush, or may be used
 separately and with or without paint,

[Printed, 4d. No Drawings.]

A.D. 1861, June 26.—N° 1634.

TUSSAUD, JOSEPH RANDALL, and TUSSAUD, FRANCIS
 CURTIUS—"Improvements in obtaining the separation of feathers,
 " hair, or other covering from the skins of animals, and in secur-

"ing such in position when separated." The object of this invention is to remove feathers, &c. from skins, so as to retain their natural arrangement, and preserve the skin. For this purpose the skin with the feathers or hair upwards is laid on a board or suitable surface, and a solution of shellac or similar substance applied to the feathers or hair. When the shellac has become dry by evaporation, it will hold the feathers or hair, and the skin can be drawn off. To the ends of the feathers, &c., exposed by the removal of the skin, a solution of india-rubber or other suitable adhesive matter is applied, strengthened if necessary by woven or other material. The shellac may then be removed by the application of a suitable solvent.

[Printed, &c. No drawings.]

A.D. 1861, July 31. N° 1906.

FLANDRIN, JAMES FERRASSON. - "Improvements in
"machinery for splitting, dividing, or shaving leather or skins or
"sheets of manufactured fabric." The patentee says:—"The
"knife or cutting instrument consists of an endless metal band
"extended over a pair of pulleys, and provided with a sharp
"cutting edge, which by the rotation of the pulleys is kept in
"motion as the skin or fabric to be operated upon is fed forward.
"It is important that the skin or leather should be fed forward
"to the knife in a suitable and regular manner, otherwise the
"cutting instrument will not act properly. To this end the
"skin, leather, or sheet is supported upon an endless travelling
"cloth or table, to which a progressive motion is given by means
"of suitable gearing actuated by the driving shaft."

"A modification of this plan consists in placing the leather or
"skin on a rotating cylinder, which will carry it forward as the
"cutting operation proceeds, or the skin may be placed upon
"a flat horizontal table which may be moved forward by rack
"gearing or otherwise."

"Another modification consists in causing the skin to bear
"against a vertical bar over which it may be drawn by means
"of a holding roller or cylinder, the knife being made to act
"vertically instead of horizontally as in the former instances."

"Another important matter is to maintain or hold the skin or
"leather firmly against the gauge roll during the cutting opera-
"tion; this has sometimes been attempted to be done by means of

" a long elastic roller, but as skins differ in thickness in various places, and sometimes have lumps of fat or flesh in or adhering to them, this contrivance has not been found to answer satisfactorily in all cases."

" My improvement in this part of the machine consists in subdividing either the supporting roller or the gauge roller into a number of contiguous small rollers, all of which will be susceptible of independent action without interfering with the others." " These pressing rollers are kept up to their work by springs or by being made to bear against an elastic bed roller. The subdivided pressing or gauge rollers may be placed above the travelling endless supporting sheet; or the pressing or gauge roller may be made in one length, and the supporting sheet and roller may be subdivided into sections with separate rollers and travelling endless belts adapted thereto on which the skin, leather, or sheet to be operated upon may be placed and carried forward to the knife or cutting instrument by the progressive motion of the travelling endless belts. It will, however, be found most convenient to make the travelling endless belt in one width, and the supporting roller in one length, and this latter should be supported from behind by wheels or rollers which may be mounted in the same framing, and this supporting roller, with the whole of the back arrangement of rollers being in the same framing, will be capable of adjustment on a centre according to the thickness of the skin; and this framing with the supporting roller, which will act as a gauge roller, may be set at any point by means of an adjusting screw and nut at each end, so that by raising or lowering the supporting or gauge roller, the skin or sheet may be split or divided to any gauge or thickness. In this arrangement the upper or pressing roller is subdivided into any convenient number of small rollers, each of which is surrounded by a belt and acts independently of the other in the same manner as the supporting rollers in the former instance."

[Printed 10d. Drawings.]

A.D. 1861, August 15.—N^o 2037. (* *)

MÉNARD, AUGUSTIN FRANÇOIS.—(*A communication from Yves Auguste Rehm.*)—"Improvements in tanning, and in the apparatus employed therein."

In carrying out this invention, solutions of tannin of different degrees of strength are formed with bundles of oak bark. "These solutions are placed in a series of vats, vessels, or pits arranged in parallel lines or in any other convenient manner. The skins are plunged in the said vats or vessels and operated upon alternately by contact with the tannin" [tanning?] "liquids in combination with solutions of aluminum, calcium, sodium, and other similar bodies, in which is injected carbonic acid gas or compounds of carbon, gaseous or liquid, according to the quality and use of the leather required, for the purpose of gradually coagulating the gelatine and albumen of the skins. By the action of electricity and forcing currents of gas into the solutions the pores of the skins become opened and the tannin" [tanning?] "of the leather is rapidly effected."

If a series of 40 vats are used "the solution of tannin having acquired its greatest density in vat No. 20 then decreases in strength until it reaches vat No. 40, whence it flows into a reservoir, from which it is conveyed to the vat to be again strengthened with bark." Carbonic acid gas is conveyed into vats No. 20 to 40 inclusive by means of perforated false bottoms. "An electric or galvanic current" is established "in four vats (of the series No. 20 to 40) containing solutions of lime, phosphate of lime, barytes, alumina, or magnesia in combination with gases, to assist the action of the tannin on the skins."

[Printed. 47. No Drawings.]

A.D. 1861, September 14.—N° 22255.

JENNINGS, HENRY CONSTANTINE. — "Improvements in treating hides and skins." The invention consists in a method of tanning by means of alum, sulphuric acid, and other agents. The hides or skins are first unhaired in the usual way, and are returned to the lime pit for 24 hours after the hair and offal parts have been separated. The hides, &c. are then washed in water containing two pounds per cent. of hydrochloric acid. They are next heaped upon a frame which can be lowered into and raised from the pits, wicker hurdles alternating in the heap with the hides so as to separate them. Two pits are used called No. 1 and No. 2. "No. 1 is charged with a solution of sulphate of alumine or alum of commerce saturated at the atmospheric temperature; to this solution is added two pounds per centum of sulphuric acid and two pounds per centum of hydrochloric acid. Pit or

" tank No. 2 is charged with a solution of carbonate of soda; or
 " soda ashes saturated at the atmospheric temperature, and to
 " this it is preferred to add five pounds per centum of dry
 " tungstate of soda." The hides on the frames are immersed for
 six hours in one pit, then raised out drained and immersed for
 six hours in the other pit. They are thus immersed for periods
 of six hours in each pit alternately, so as to expose them to the
 decomposing action of solutions, one acid the other alkaline, until
 they are tanned. They are next put into a solution of tungstate
 of soda, and when saturated with this are placed in a solution of
 soap in which they are stirred about until the soap is absorbed in
 them. They may be steeped in a solution of twig or coppice oak
 bark to give them colour and odour. With some kinds of skins
 vegetable or animal oil may advantageously be applied to the
 grain surface of the skins, and with thin and light skins if color
 is of importance "it is advantageous to add on or about 5 lbs. per
 " cent. of filings of zinc to pit or tank No. 1 (the acid solution),
 " the metal dissolves and the zinc salts that are formed will
 " impart extreme whiteness to the goods." When great hardness
 and density is required in the leathers the proportions of sulphate
 of alumine used should be increased and the solution in tank
 No. 2 diluted, and the skins should remain two or three hours
 instead of six hours in that solution.

[Printed, 4d. No Drawings.]

A.D. 1861, October 29.—N° 2716.

JOHNSON, JOHN HENRY.—(*A communication from Friedrich Knapp.*)—"Improvements in the preparation or treatment of skins
 " and hides." The invention consists in a substitute for the
 the ordinary tawing and tanning processes. The patentee says :—
 " The skins and hides are to be submitted to a kneading, fulling,
 " or other similar process, and whilst undergoing that treatment
 " are to be incorporated with a mixture or mixtures of com-
 " pounds of the fatty or oily acids, such as stearic, margaric,
 " or oleic acids, or other suitable fatty or oily acids or mixtures,
 " or compounds of the same with metallic oxides, such as the
 " oxides of iron, chromium, manganese, or any other suitable
 " metallic oxides; or instead of employing metallic oxides in com-
 " bination or in conjunction with the fatty or oily acids, silicates
 " of the metallic oxides or of the alkaline earths, such as baryta
 " or lime may be used in combination or in conjunction with

" the fatty or oily acids, either alone or in combination with any
 " of the metallic oxides, or the fatty or oily acids herein-before
 " mentioned."

" The skins or hides when cleansed may either be indurated on
 " one or both sides or may be completely impregnated, as may be
 " desired, with a compound previously prepared consisting of one
 " or more of the fatty or oily acids, such as stearic, margaric,
 " oleic, or other fatty or oily acid, in combination or in conjunc-
 " tion with suitable metallic oxides, or the skin or hide may be
 " prepared " " by being, firstly, immersed in, or indurated, or
 " impregnated with a solution of a suitable salt of a metallic
 " oxide, by preference such salt or salts being neutral, or as nearly
 " so as convenient; and then, secondly, by being immersed in or
 " indurated with a solution of a soap, that is to say, with a solu-
 " tion in water of an oleate, stearate, margarate of soda or potash,
 " or other cheap soluble soap.

The improvements further consist " in the employment of sil-
 " icates of the metallic oxides, or of the alkaline earths, such as
 " baryta or lime, or any other suitable earthy compounds in conjunc-
 " tion with the fatty or oily acids, either alone or in combination, or
 " in conjunction with any of the metallic oxides and the fatty or
 " oily acids in a manner similar to those herein-before described,
 " that is to say, either by previously preparing a mixture or com-
 " pound of the silicates of the metallic oxides or of the alkaline
 " earths, as before described, with fatty or oily acids, and apply-
 " ing such mixture or compound to the skin or hide, or by first
 " impregnating the skin or hide with a metallic salt, or with a
 " soluble salt or compound of the alkaline earths, and then by
 " subsequent immersion in or impregnation with a solution of
 " a soluble alkaline silicate, or by firstly immersing the hide or
 " skin so treated in or impregnating the same with a solution
 " of a soluble silicate, and then subsequently immersing in or
 " impregnating with a solution of a soluble soap, such as before
 " described, or by the employment in like manner of a solution
 " containing mixtures of the said soluble silicates and of the
 " soluble soaps."

[Printed, &c. No Drawings.]

A.D. 1861, November 12.—N^o 2844.

DUVAL, LOUIS FRANÇOIS, and BEAUDERT, LOUIS ANDRÉ.—
 " A new process of tanning." The patentees say:—" We pre-

" pare solutions of tannin or tanning liquors in close vessels, chambers, or receivers, in such manner that during the preparation of such solutions they shall be kept from all contact with atmospheric air or with oxygen, or in other words, atmospheric air and oxygen shall be excluded from them; and we prepare them in the presence and under the sole action of neutral gases having no alkaline or acid properties, and being of a nature to exert no prejudicial action on the tannin or on the hides or skins. The gas we prefer to employ for the purpose is hydrogen gas, or gaseous compounds thereof, or azote or nitrogen gas, or hydrogen or its compounds with azote or nitrogen, and we employ such gas or gases either under pressure or not."

" We perform the process of tanning in pits, troughs, chambers, or vessels closed hermetically from which the atmospheric air is excluded, so that while the tanning operation is being performed therein the hides or skins shall be kept wholly free from the presence of or contact with the atmospheric air; and we admit into the pits or vessels hydrogen gas or gaseous compounds thereof, or azote, or nitrogen gas, or some other neutral gas having no acid nor alkaline property, and being of a nature to exert no injurious effect either on the tannin or on the hides or skins, so that we perform the tanning operation in the presence and under the action of such gas or gases. We particularly recommend for the purposes of our invention the use of hydrogen gas, as that agent especially preserves the skins, decolorizes them, or imparts them a fine marketable color, and allows of the tanning being performed more expeditiously."

" We also arrange or connect tanning pits or vessels after the manner of the arrangement known as Woulfe's apparatus, whereby we effect communication between the said pits or vessels."

[Printed, 8d. Drawing.]

A.D. 1861, November 15.—N^o 2879.

SOUPART, LOUIS ANTHONY.—(*Provisional protection only.*)—

" Improvements in the mode of preparing and subsequently tanning hides or skins." The inventor says:—"The apparatus consists of three tubs, vats, or chambers of suitable size acting to the kind of skins and the quantity to be operated

" upon; within the first I introduce the solution of tan obtained
 " by steeping oak in water, or by any other process; a commu-
 " nication is made by means of a cock and tube with a second
 " vat or chamber, within which is a frame or box on which are
 " stretched and suspended the skins to be operated upon. The
 " tube from the first vat enters this about the middle and conveys
 " to it the tanning solution. On the opposite side of the vat is an
 " opening communicating with another tube, which may be called
 " the discharge tube, which conducts the solution into a third vat
 " or chamber called the receiver; the discharge tube leaves the
 " central vat at a point whose level is the same as the supply tube;
 " the skins are suspended transversely to the direction of the
 " tubes; by means of this arrangement a continuous current of
 " the liquor passes through the skins."

[Printed, &c. No Drawings.]

A.D. 1861, December 9.—No 3081.

MENNON, MARG ANTOINE FRANÇOIS.—(*A communication from François Debous and Théobald Denny.*)—(*Provisional protection only.*)—"Improvements in the production of relief designs " or metallic surfaces for general printing, gaufering, and em-
 " bossing purposes." In the processes here described the follow-
 ing preparations are used, which will hereafter be referred to by
 their numbers only.

No. 1.—Varnish.

Rectified benzine - - - 20 ons.
 Caoutchouc in sufficient quantity
 to saturate and leave an ex-
 cess undissolved.

To the resulting viscid solution is added a mixture of—

Rectified oil of naphtha - - - 7 ons.
 Essence of turpentine - - - 3 ons.

The mass is heated for 15 minutes to from 70° to 80° (centi-
 grade), and left to cool.

No. 2.—(Ground protecting solution.

Saturated solution of virgin wax
 in rectified essence of turpen-
 tine - - - - - 3½ ons.
 Rectified oil of naphtha - - - 1 on.

Intimately mixed.

No. 3.—Clearing solution.

Rectified oil of naphtha or petro-

leum - - - - 2 ozs.

Sulphuric ether - - - 1 oz.

The whole saturated with virgin wax.

No. 4.—Ground coating.

Replacing solutions Nos. 2 and 3.

Tallow - - - - 9 ozs.

Virgin wax - - - 1 oz.

Melted over a slow fire and a little lampblack added.

No. 5.—Electrotype deposit bath.

Solution of cyanide of copper, guaging from 2° to 3°
(Beaumé).

No. 6.—Cleansing compound.

Venetian tripoli reduced to paste by alcohol or sulphuric ether.

No. 7.—Electrotype etching bath for zinc plates.

Saturated solution of sulphate of

zinc - - - - 30 ozs.

Saturated solution of nitrate of

ammonia - - - 10 ozs.

No. 8.—Mineral ground coating.

Zinc or lead white, chrome yellow, lithographic stone,
or other substance of like nature finely levigated
and reduced to paste by distilled water or alcohol.

No. 9.—Adhesive compound.

Virgin wax - - - 3 ozs.

Pulverized bitumen of Judæa - ½ oz.

Purified tallow - - - ½ oz.

No. 10.—Acid solution for etching, in lieu of the electrotype
bath for zinc plates.

Sulphuric or hydrochloric acid - 1 oz.

Water - - - - 100 ozs.

No. 11.—Electro-chemical etching solution for zinc plates.

Saturated solution of sulphate

of copper - - - 200 ozs.

Saturated solution of sulphate

of iron - - - 300 ozs.

To each 100 ozs. of the combined solution is added—

Sulphuric acid	-	-	20 ozs.
Nitric or hydrochloric acid	-	15	„
Acetic acid	-	-	30 „

No. 12.—Protecting coat for blanks.

Virgin wax	-	-	2 ozs.
Tallow	-	-	1 oz.

Mixed together and coloured by red peroxide of iron or lamp-black. All these quantities are calculated on the avoirdupois scale.

The face of the plate to be operated on is polished and coated uniformly with No. 1. Then heated to from 60° to 80° (Cent.). The coating being dried the plate is placed on a cast iron table, heated to 120° (Cent.). When the varnish attains a straw colour the plate is set aside to cool. The design is then traced by means of any point sufficient to cut through the coating of varnish, but not act on the metallic plate. No. 2 is then brushed on to the plate, after which No. 3 is applied to it. Or instead of Nos. 2 and 3, No. 4 may be used. After the perfect clearness of the lines forming the design has been tested, "a metallic conductor is secured to the plate, the obverse and edges of which are coated with an insulating varnish of any suitable kind." The plate is then connected with the zinc elements of a constant voltaic battery, and passed to an ordinary electrotpe trough, charged with solution No. 5, in which is immersed a sheet of copper communicating with the opposite pole. The action of the voltaic current is continued about 90 minutes, and the unprotected lines of the design are filled up by a thin sharp deposit of copper adhering to the plate. The plate is taken from the bath and freed from varnish by No. 6. "The design in relief thus brought to view is found to be the exact reproduction of that traced on the varnish. The plate being then ready for the ground etching is connected with the anode of the battery, and immersed in the bath No. 7, in which is placed a clean sheet of copper in communication with the sinode." The surfaces unprotected by the copper deposit are dissolved away. When the grounds have been eaten out to the requisite depth, the plate is taken out and dried. The entire surface is then covered with No. 8. A sheet of smooth paper or cardboard is then coated with No. 9. and applied to the face of the plate. "In this process the

"uncovered top and lateral surfaces of the relief lines are coated with the wax mixture; on the other hand, the mineral paste adheres with sufficient tenacity to be entirely carried off on the removal of the paper." The reliefs thus covered with waxy matter are sprinkled with powdered resin, and the plate is placed on a tablet gradually heated to fuse the resin, "which in liquifying forms a uniform coating over the top and lateral surfaces of the relief; this done, the unprotected grounds are attacked either by the battery, as above, or by suitable acids (such as by solution No. 10), and are eaten out to the depth of about $\frac{1}{96}$ th of an inch."

The process here described applies to zinc plates, and must be modified to suit any other metal employed. The metallic surfaces prepared in the manner described may be applied to gaufering, gilding, embossing, and ornamenting leather.

[Printed, 4d. No Drawings.]

1862.

A.D. 1862, January 8.—N^o 55.

STENHOUSE, JOHN.—"Improvements in rendering certain substances less pervious to air and liquids." This invention relates to the use of paraffine, either solid or dissolved in any usual solvent for the purpose of rendering various substances less pervious to air and liquids. The leather or fabric is stretched on a heated plate, and when it has become sufficiently warm to soften or melt paraffine easily it is rubbed over on one side with a flat block of solid paraffine. Pressure may then be applied to it by means of hot rollers or otherwise. When the coating or impregnation is complete, the leather, &c. is taken off and allowed to cool.

A roller or bar of solid paraffine may also be used, the material to be impregnated being kept in close contact with it by suitable pressure.

Or melted paraffine may be used. Sheets of woollen or similar absorbent substances soaked in paraffine are applied on either side of the leather. The whole is then passed between hot metallic rollers or otherwise pressed. The substances may

also be treated with solutions of paraffine. Any usual solvent may be used, those preferred being the most volatile portion of highly rectified coal tar, or petroleum, naphtha, or bisulphuret of carbon either singly or mixed. The solution may be applied with a brush, and in the case of leather when the greater part of the solvent has been removed by exposure to heat, hot flat irons or rollers may be applied.

[Printed, *ad.* No Drawings.]

A.D. 1862, January 21.—N° 150.

WRENTHAM, JOHN.—“Improvements in the protection of “metallic surfaces, and in rendering certain substances less “pervious to air and moisture.” “This invention relates to the “use of paraffin, either in a solid state, or dissolved in any of “the usual solvents, such as highly rectified coal tar, or petroleum, “naphtha, or bisulphuret of carbon, for the purpose of protecting “metallic surfaces and rendering certain substances less pervious “to air and moisture.” Mixtures of paraffin with wax, stearine, stearic acid, or any of the other solid fat acids can also be employed, but the use of paraffin alone is preferred. Among the substances to which paraffin, its admixtures or solutions, may be applied, are manufactured skins and furs. These preparations may also be used “as a substitute for oil in currying and dressing “leather and skins.”

The manufactured skins or furs are stretched on a heated plate, and when they have become sufficiently warm to melt paraffin easily, they are rubbed over on the flesh side with a flat block of solid paraffin. The paraffin is made to penetrate simply by the application of heat. When the impregnation is complete the skins are taken off and allowed to cool.

A roller or bar of paraffin may also be used, the skins or furs being kept in close contact with it by suitable pressure. The incorporation of the paraffin with the skins or furs is then completed by heat. Cold paraffin may also be rubbed on to the skins or furs and incorporated with them by the application of a hot iron; or may be otherwise melted into them.

Or melted paraffin may be used. On a plate of iron heated above the melting point of paraffin is placed a sheet of stout paper, or other absorbent material, which is then coated over with paraffin. On this the skins and furs are laid with the flesh side

" salted and dried, it is desirable to use a rather concentrated solution, say, containing from 15 to 18 per cent. of the preservative salt; this is spread or sprinkled on one of the two surfaces of the hide or skin in such quantity that it will not run off therefrom; the hides or skins are left in this manner folded the one on the other during from 24 to 48 hours, and then the other sides of the hides or skins are treated in a similar manner." They are not in any case to be raised in water on coming out of the bath.

[Printed, 4d. No Drawings.]

A.D. 1862, April 15.—N° 1078.

FELL, GEORGE, and HAYNES, WILLIAM.—"Improvements in machinery or apparatus to be used in the manufacture of leather." The patentees say:—"We cover a roller, drum, or cylinder with emery, sand, pumice stone, ground glass, or other rough cutting substance, or face it with rough metal similar to a file or rasp. The said roughened roller, drum, or cylinder is placed in suitable bearings, and has a rapid revolving motion imparted to it by power. The skins or hides are placed in contact with the rough surface of the roller, drum, or cylinder during its rapid motion, by which means the operations commonly called shaving, paring, whitening, grounding, buffing, and softening are performed on sheep, goat, calf, seal, deer, or other skins or hides by the friction or grinding action of the aforesaid roller, drum, or cylinder." A wide-mouthed pipe is placed on one side of the roller, and the dirt or refuse is by means of a fan drawn down through this and expelled.

[Printed, 10d. Drawing.]

A.D. 1862, May 19.—N° 1517.

NEWTON, ALFRED VINCENT.—(*A communication from Joseph Andress Safford.*)—"Improved machinery for splitting leather." The object of this invention is to prevent the choking or clogging of leather-splitting machines, by reason of the inequalities in the thickness of the leather under operation. To this end the feed roll (which is fluted to give it a good hold of the leather fed into the machine) is mounted in sliding journal boxes, which are retained in position by springs pressing upwards. Over the feed roll projects the fixed splitting knife, and mounted above

" the feed roll in [is?] a gauge roll, the journal boxes of which are
 " capable of sliding like those of the feed roll in vertical guides
 " formed in the side frames of the machine. The upper or gauge
 " roll is made adjustable, its bearings being pendent from vertical
 " screws, which carry bevel wheels, into which take bevel wheels
 " from a cross shaft at the top of the machine; by turning this
 " shaft by a hand wheel provided for the purpose the gauge roll
 " may be raised or lowered to any required extent to suit the
 " thickness of material under operation. The journal boxes of
 " the feed roll are connected together by a cross rod, from which
 " depend rods connected with a treadle. (On the foot of the op-
 " erator being applied to the treadle, the feed roll will be instantly
 " depressed, and it is to effect this, and thereby remove the ten-
 " dency of the machine to choke or clog, through an excessive
 " inequality of thickness of material coming between the gauge
 " and feed rolls and knife that this arrangement is provided. In
 " general, however, the yielding of the pressure springs will
 " suffice to give the machine the necessary relief."

[Printed, &c. Drawing.]

A.D. 1862, May 30.—N^o 1625.

PAYKAM, PHILIPUS URSAIN.—"Improvements in protecting
 " dry or green hides from vermin." The patentee says:—"I
 " use a mixed solution of sulphate and chloride of zinc, marking
 " fifteen degrees by 'Baumé's' aerometer, sometimes adding from
 " eight to ten grains of arsenic for every quart of this liquid.
 " The presence of the arsenic not being essentially necessary, I
 " reserve the option of using or not using this body." The op-
 " eration is "effected by applying with a brush or otherwise a
 " coating of my liquid on that part of the hide only which has
 " adhered to the flesh. To operate more rapidly, the hides may
 " be immersed in the liquid, and this method is most preferable
 " for hides with hair, such as have oxen and horses. With respect
 " to woolly or furry skins, which, if plunged into the liquid
 " would absorb a large quantity in pure waste, it will be found
 " most economical to simply coat them (using a brush) on the
 " side which adhered to the flesh." The operation will "suffice
 " to guarantee dry or green hides from the invasions of vermin
 " and from putrefaction, permitting their preservation for an
 " indefinite period."

[Printed, &c. No Drawings.]

A.D. 1862, May 31.—N° 1651.

NEWTON, WILLIAM EDWARD. — (*A communication from William Elmer.*) — This invention relates to improvements in making cloth, leather &c. more durable and waterproof, and also in the production of artificial leather. The first object is effected by submitting the articles to the action of a solution of alumina, or its basic salts, or other true mordant and gelatine, so as chemically to combine the alumina and gelatine and form an insoluble composition, which combines chemically with the fibre of the cloth, &c. A solution of tannin is then applied. The cloth is then pressed, mordanted, and dried, and rendered waterproof by the same process as is applied to leather. In the treatment of leather the employment of gelatine is not necessary, the leather being already formed. Benzole is first applied to remove the surplus oil and grease, after which the alumina is applied and followed by a tannic acid solution. The waterproofing is accomplished by applying to the tanno-aluminous compound surface an elastic coating formed of the sulphide of gutta percha or caoutchouc in a semifluid state. The leather is then passed between metallic rollers, the one with which the elastic coating is in contact being heated. "By this method the elastic coating becomes perfectly uniform, and unites with the surface, to which it is applied, being attracted to this surface by the alumina, which acts by the force of cohesion or true chemical affinity." It is then rolled and a paste of alumina and ichthyocolla is applied to it, and afterwards a solution of tannic acid.

The artificial leather is formed from any suitable cloth. The cloth is immersed in a solution of the sulphate of alumina or other aluminous salts in a covered vessel, and then in a solution of tannin, "during which time the aluminated fibre absorbs a portion of the tannin forming with it an insoluble composition." If the leather is to be black a solution of sesquisulphate of iron is used, or any colours or shades may be developed chemically. When the leather has been dyed it is partially dried and then immersed in a heated solution of gelatine, after which it is placed in a cold aqueous solution of tannin. When dry the oil of birch, naphtha, and a little neatsfoot oil is applied to one side of the leather. If the opposite side be not sufficiently smooth a paste of gum tragacant and tannin is worked into the leather, which is then rolled down and washed with a solution of

alumina. An elastic coating is then applied to it, formed of the sulphide of gutta percha or caoutchouc. A solution to develop the colour is then rubbed over the leather, and a coating of flexible varnish applied to it.

[Printed, &c. No Drawings.]

A.D. 1862, June 5.—N° 1693.

MOIROUX, JOSEPH EMILE.—(*Provisional protection only.*)—

“ A new compound for protecting and preserving the polish, polished, and other surfaces of metals, woods, skins, and paper; and for rendering all woven, textile, and other fabrics water and weather proof.” “ The compound or liquid is produced by the chemical action of acids, water and ether, or the quin-tescence of alcohol upon silk, cotton, or other suitable vegetable matter, by which the latter is decomposed, dissolved, and converted into a liquid state, so as to combine or mix with the rectified spirit, and form a limpid transparent gum, or compound.” The liquid may be used with colour.

[Printed, &c. No Drawings.]

A.D. 1862, June 10.—N° 1730.

JENNINGS, HENRY CONSTANTINE.—“ Improvements in the preparation of skins for driving bands and harness traces.”

The patentee says :—“ The hides or skins are to be deprived of hair by the usual means employed by tanners, or by solutions of caustic soda or potassa. The pelts or dehaired skins are now to be pared and rendered even and smooth upon the flesh side, so as to make every part of equal thickness, and are now to be steeped for two days in a solution of soda ashes, or of crystals of soda of commerce, or of pearl ashes, the solutions to be saturated with the above-named carbonated alkalis at the ordinary atmospheric temperature, and must remain in the solution until perfectly impregnated and swelled to the maximum thickness, after which the skins must be drained for a few hours, and then immersed in a saturated solution of sulphate of iron, with about two or three per cent. of sulphuric acid. [If fine color is desired, a solution of carbonate of iron dissolved in acetic acid or wood vinegar may be used.] When the iron liquid has penetrated completely into the skins, they are to be soaked in a solution of carbonated alkali until the sulphuric acid of the

“ iron solution is decomposed, and again to be returned to the
“ solutions of iron, so on alternately changing the skins from
“ the alkaline solution to the ferruginous solution until the skin
“ becomes firm and solid, and the whole of the gelatine is trans-
“ formed into an insoluble [insoluble] substance. This object
“ attained, the skins are to be wetted with the alkaline solution,
“ and then steeped in a mixture of rosin oil, rock oil, paraffine oil,
“ or naphtha, or any liquid hydrocarbonate, and in which has been
“ dissolved 15 lbs. per centum of gum thus or colophane or
“ resin, frequently turning and moving the skins to ensure the
“ penetration of the oily composition. When a perfect combina-
“ tion has been effected, which will depend upon the thickness of
“ the skins or hides, the skins are to be dried in the air, and
“ when dry are to be rubbed or pressed with a mixture composed
“ of equal parts of boiled linseed oil and turpentine. The skins
“ are now to be cut into strips or bands of the desired breadth,
“ and rolled or pressed to condense or equalize the substance.
“ Before the bands are sewn or rivetted into lengths, it will be
“ advantageous to rub into the surfaces a mixture of soft soap
“ and cod or neat’s foot oil, to give the bands the proper degree
“ of suppleness, without, however, producing too great elasticity
“ by employing too much of the mixture. For very thick skins
“ a weak solution of caustic soda or potassa may be used with
“ advantage, instead of carbonated alkalies.” “Dried, salted,
“ limed, or alumed skins from foreign countries” should, before
undergoing the patented process, be steeped in soft water, and
then in water containing bran, pea meal, and molasses, until
acetous fermentation has taken place.

[Printed, *4d.* No Drawings.]

A.D. 1862, October 6.—N° 2700.

COX, STEPHEN FITCHEW.—“Improvements in washing and
“ tanning hides and skins.” The hides or skins are to be “placed
“ within a frame, which it is preferred should be of a cylindrical
“ form, though the shape of the frame may be varied; the
“ periphery or circumference of this frame is composed of bars
“ parallel to, but at a short distance from each other. Each of
“ the two ends of this frame is provided with a neck or axis;
“ these axes are supported by, and turn in suitable bearings.” The
“ claim is not claimed separately from the process. “Provision is

"made for fastening one end or one side of a skin or hide to each of the bars, in such manner that when a bar is at the highest position the skin or hide attached thereto will hang from that bar almost free, and nearly perpendicular within the frame in an open and extended state; hence, as the frame is caused to rotate slowly on its horizontal axes," "each skin or hide will during its passage through the liquor in which the frame is partially or wholly immersed, be first caused to be rolled or folded up, and will then, as its bar comes up to the highest position, be unfolded or unrolled." "It is preferred to attached [attach] the hides or skins to the several bars with the flesh sides all in the same direction." The frame is partially immersed in a vat or pit.

[Printed, 1s. 4d. Drawings.]

A.D. 1862, October 21.—N° 2827.

BUTLIN, WILLIAM.—(*Provisional protection not allowed*)—The invention consists in a method of splitting leather, and of "making usable leather out of waste pieces." The inventor says:—"My improvements in machinery for splitting leather consist, firstly, in the application of frictional driving gearing, whereby the cut is rendered more even and uniform than that produced by machines of this description driven by the usual toothed gear as hitherto employed.

"Secondly, my improvements consist in connecting the spindles bearing upon the press roller steps by means of a cross shaft and bevil gear, by which means the roller can be raised and lowered parallel with the press table or plate.

"My invention for making leather out of waste pieces or scraps of leather consists in reducing them to a pulp, which is then mixed with a cementing solution and rolled or pressed into sheets or pieces. I also use the cementing solution and pulp mixed in certain proportions for making waterproof leather. The machine which I employ for grinding or triturating the waste leather is similar to that employed in paper mills for producing the pulp."

[Printed, 4d. No Drawings.]

A.D. 1862, October 23.—N° 2862.

BROOMAN, RICHARD ANCHIBALD.—(*A communication from Joseph Mouron.*)—"Improvements in tanning." The patentee

“ going process the aforesaid composition (consisting of gelatine, glycerine, and albumen with a neutral salt or metallic oxyde) other proteic and gelatinous matters or substances kindred or congeneric thereto may be used in like manner in such process.” In the expression “ proteic and gelatinous matters,” &c. are included “ proteine compounds and derivatives, matters having proteine for their base, substances of the proteic, albuminoid, proteiniferous, or proteine group (as they are variously called) and glutine, chondrine and gelatinous, and gelatiginous matters and compounds, and substances analogous, congeneric, or kindred to the same.”

[Printed, 4d. No Drawings.]

A.D. 1862, December 8.—N° 3289.

NEWTON, WILLIAM EDWARD.—(*A communication from Victor Pierre Celestin Band.*)—(*Provisional protection only.*)—“ Improve-
ments in preserving animal substances.” The only portion of this provisional specification relating to skins, &c., is as follows:—
“ In order to preserve animal matters, such as hoofs, horns, or skin for manufacturing purposes, so as to render them suitable for exportation from long distances, the animal substances are steeped for several hours in a saturated solution of pyroligneous acid and lime or other suitable base, after which they are dried either in the air or by any suitable dessicating process.”

[Printed, 4d. No Drawings.]

A.D. 1862, December 29.—N° 3468.

NEWTON, WILLIAM EDWARD.—(*A communication from Leonard Laureau.*)—(*Provisional protection only.*)—The inventor says:—“ This invention relates to certain improvements upon an invention for which Letters Patent were granted to me bearing date the 17th October 1859 (No. 2367), and which was partly communicated to me by the inventor of the present improvements which consists in treating fresh skins with the heavy oil of tar or other suitable hydrocarbon. This preserving substance may be applied either by anointing the flesh side of the fresh skin therewith or by dipping or steeping the skins in a vessel containing water to which from 2 to 5 per cent. of the heavy oil has been added. These proportions may be varied according

" to the nature and strength of the hydrocarbon employed and
" the length of time to which the skins are subjected to its
" influence."

[Printed, &c. No Drawings.]

1863.

A.D. 1863, January 6.—N^o 50.

TURNER, GEORGE.—"A new method of making leather from
" waste pieces of common leather." The leather cuttings or other
" waste pieces of leather are first converted into pulp by any known
" process, and this pulp is digested in suitable vessels with warm
" water. " When sufficiently digested the pulp is treated with a
" caustic alkaline solution, such as is formed by the oxides of
" the alkaline metals, the alkaline earths, the hydrates of such
" oxides, the subcarbonates of these or other substances having
" an alkaline reaction. The pulp after having been thus treated
" is pressed or rolled into sheets or bands which are then im-
" mersed in tan liquor, or other acid astringent solution, whereby
" the action of the alkali will be arrested, and which combining
" with the organic matter dissolved by the alkali, at the same
" time converts the gelatinous matter into tannate of gela-
" tine. By this process a homogenous substance approaching in
" its chemical composition to ordinary tanned leather will be
" produced."

[Printed, &c. No Drawings.]

A.D. 1863, February 4.—N^o 311.

TALLEN, THOMAS EDWARD.—(*Provisional protection only.*)—
" Improvements in the manufacture of leather and in machinery
" for that purpose." " Upon two side frames is placed a table
" on which the hide or leather travels; upon the same frames and
" immediately above is mounted a shaft on which is fixed a
" number of knives or scrapers so arranged as to give a continual
" pressure upon the hide or leather, and to these knives is given
" a circular motion, so that the knives being driven at a proper
" speed by means of suitable pulleys and belts, have action upon

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“ the hide or leather under them, and by this means the hide or leather is gradually carried forward, and thus the operation is completed.”

[Printed, 4d. No Drawings.]

A.D. 1863, February 14.—N° 412.

MORGAN, JOHN.—“ Improvements in embalming and preserving from decay human bodies and bodies of other animals, also pickling, curing, and flavoring animal bodies.” “ In carrying out this invention it is proposed to employ any suitable preservative fluid, but it is preferred to use a saline solution consisting of chloride of sodium and nitre, or solutions of an analogous nature, perfumed with spices and flavored or not as required. This or any other suitable preservative solution is to be injected into and through the circulatory organs of the body to be preserved, or flavored, by any suitable or well-known contrivance, which will cause the preservative or flavouring fluid to pass through the arteries and veins, and finally to be retained therein and so percolate throughout the entire mass of the body.”

The patentee proposes “ to cure and preserve not only the bodies but the hides of animals, where it is desired.” This is effected by impregnating them with salt, salt and saltpetre, salt and muriate of ammonia, or other salts, sugar, treacle, or materials for preservative purposes.

[Printed, 4d. No Drawings.]

A.D. 1863, February 26.—N° 540.

CAPELLO, ANGE. — (*Provisional protection only.*) — “ An improved method of and apparatus for glazing morocco leather.” The inventor says :—“ The machine by which I effect the object of my invention is composed of the glazer and the sleeper, differing from each other only in their lower part. A piece of wood placed horizontally pivots on two pins, and the main balance beam is fixed to this piece by two bolts ; it is composed of a triangle V and of a piece of wood placed perpendicularly, which may rise and fall according to the requirements of the works between the sides of the triangle which support and guide it in grooves. A piece of iron fixed to the lower part of the balance beam fills in some measure the office of a connecting rod producing the swinging motion.”

" I will now describe the glazer. The end of the main balance beam is furnished at the bottom with two sheet-iron plates, carrying two bearings, in which rolls a pin carrying a glass, crystal, wooden, or other roller, according to the leather and the nature of the work. This roller is between two iron plates which fix it to the pin by a nut, and outside the plate which is fixed to the end of the main balance a toothed wheel is fastened on the same pin. When the balance beam is pushed on one side, a catch prevents the toothed wheel and the roller from turning; this latter dragging along the board. On this board is placed the leather which is being glazed, and while travelling the distance (about a yard) the roller glazes one strip. When the main beam has arrived at the end of this journey, and that, by the motion of another small beam, it is brought to the other end of the board, the catch flies on to the teeth of the wheel, and the roller then runs on the leather without glazing it. When it has again arrived at the other end it glazes another strip, and so on continuously, and, when the entire skin is glazed, the apparatus is arrested while another is substituted. The board as well as the piece of wood which pivots must be flexible. This board rests on two small boards, which are on two wooden screws, serving to raise or lower the board at will. The main beam should be about three yards long, as there is advantage in placing the balance as high as possible, and consequently giving it greater length. The lower part of the main balance is cut and held near the other by a pivot. This section is set in two cheeks; a bolt with nut holds a plate or rather a slide bolt, which facilitates the changing of the roller."

" I will now describe the sleeker or smoother. I have said that the upper part is the same as that of the glazer, namely a piece of wood on two pins or spindles; a triangle attached to this piece and another piece of wood, which may rise and fall, sliding in the triangle. The lower part finishes differently to that of the glazer, it is set in a groove [or cheeks], and pivots on a bolt, and by its arrangement when the balance moves forward, one part remains stiff and causes the roller to rub and press on the leather in smoothing it. When the balance moves in the contrary direction this part opens by the aid of a spring, so that the glass roller remains lifted and no longer touches the leather. The roller in the glazer rolls on a pivot, whereas this one is set in cheeks, between which it is pressed by a spring.

" The main balance of the sleeker or smoother may come and go with great speed, but for the glazer an average speed is required. The motion is communicated to the small balance, which gives it to the connecting rod, and this latter to the main balance. Any motive power may be used. With the means hitherto used the workman is obliged to regulate or guide the leather beneath the roller, and to put the beam in motion, which leaves an interval between each operation; but by my method the workman places the leather on the board or carrier, and the balance beam works continuously without his co-operation, and further instead of smoothing only very narrow strips, I smooth them twice as wide and much sleeker."

[Printed, 4d. No Drawings.]

A.D. 1863, March 25.—N^o 779.

WORRALL, JOSEPH HARDMAN.—" Certain improvements in the method of producing surfaces in imitation of woods and in printing therefrom." These improvements consist in a method of obtaining impressions from the natural surfaces of woods on paper, copper, zinc, or stone, and printing the patterns upon surfaces such as paint-wood, metallic surfaces, stone, leather, &c. The surface of the wood is planed, and is then covered with strong or dilute alkalies, or their carbonates, or with ethylic or methylic ethers and alcohols, or with spirits of turpentine, camphine, benzole, and chloroform, or with the oils or solutions of soaps hot or cold so as to dissolve out the resinous substances present in the cells of the wood. Or if the wood is very hard grained a corrosive acid must be used "so as to corrode, dissolve, or etch the softer parts of the wood and leave the harder parts elevated, and to enlarge the pores." The wood having been submitted to one or more of the above processes, "an impression may be taken from it in any of the well-known plastic, galvano plastic typographic, or photo-lithographic, or zincographic processes."

[Printed, 4d. No Drawings.]

A.D. 1863, March 31.—N^o 832.

HAMER, HENRY.—" Improvements in tanning and in apparatus employed therein." The patentee says:—" I suspend the hides or skins within an air-tight vessel, so that the tanning liquor which the vessel contains may come in contact with every part of each hide or skin. I exhaust the air from the

" tank, and further I keep the tanning liquor in motion during
 " the process, so as to prevent it separating, and so that it may
 " sweep off from the hides or skins the film of spent liquor
 " immediately it is formed. The apparatus I prefer to employ
 " for this purpose is a rectangular wooden tank capable of being
 " closed air-tight by a lid; within this tank is a frame somewhat
 " shorter than the tank, and capable of moving to-and-fro
 " endwise within it, this motion being given to it by a rod which
 " is attached to the frame; the rod passes out through a stuffing
 " box in the end of the tank, and is then connected with an
 " eccentric or other similar instrument. The frame runs back-
 " wards and forwards within the tank on suitable guide rails, and
 " the hides or skins are hung on laths at the upper part of the
 " frame transversely of the length of the tank. As the hides or
 " skins move to and-fro the tanning liquor passes first on one
 " side of them and then on the other. The tank is connected
 " with an air pump, and is exhausted during the process."

Tanning liquor partially used may be passed from one tank to another, and air may be forced into the tank which is being supplied and, when the tank is emptied, may be forced up to a pressure of 5 or 6 pounds to the square inch so as to press out the liquor remaining in the hides.

[Printed, &c. No drawings.]

A.D. 1863, May 8.—N° 1167.

HOTEL, EVANESCE CHAMONIN:—(A communication from Jean Baptiste Puyssensant.) "Improvements in tanning hides and
 " skins." The invention consists in a method of tanning hides
 " or skins not deprived of their hair or wool. For this purpose
 " 7 lbs. carbonaceous, 2 lbs. 'divi divi,' 2 lbs. sumach, 5 lbs.
 " oak bark (tan), 2 lbs. ferrous, and 2 lbs. common salt are boiled
 " together in 50 gallons of water for an hour. Half the decoction is
 " then "mixed with the same quantity of water" and the skins, &c.
 " are soaked in the mixture for ten days, being turned from time
 " to time. The skins, &c. then are soaked for 15 days in the
 " other half of the decoction to which no water has been added.
 " They must be turned several times, and when thoroughly pene-
 " trated with tanning liquid, are taken out and washed several times.
 " One or two of the substances above named may be omitted from
 " the decoction, the quantity of the others being increased so as

to have the same weight of tanning matter, namely, 20 lbs. to 20 gallons. The process may be applied to skins without hair.

[Printed, 4d. No Drawings.]

A.D. 1863, May 23.—N° 1298.

HOEY, WILLIAM.—(*Provisional protection only*).—"The preparation of a fluid for renewing the surface of japanned and "enamelled leathers and cloths." The composition is made as follows. Two ounces of paraffine, or rock oil, or a mixture of both in any proportion, to which is added one quarter of a drachm of oil of lavender, one quarter of a drachm of citronel essence, and half an ounce of spirit of ammonia. The mixture is applied lightly on the surface of the leathers.

[Printed, 4d. No Drawings.]

A.D. 1863, June 12.—N° 1466.

DAVIES, GEORGE.—(*A communication from Benjamin Head Lightfoot*).—"Improvements in the currying and finishing of "leather." "This invention consists in the treatment of tanned "leather by applying to the same petroleum, or any oily hydrocarbons, either alone or in combination with tallow, common "oils, or other equivalent substances." Crude petroleum may be used, and "any hydrocarbons holding more or less paraffine "in solution can be used, whether obtained by the distillation of "coal found in a natural state, or obtained by the distillation "of petroleum."

The hide to be treated is soaked, shaved, and scoured in the ordinary way and when "half dried" is rubbed level on a table. The petroleum or hydrocarbon either alone or in combination with tallow is then applied to one side of the hide, or to both if desired. Common whale oil may be mixed with the heavy petroleum or coal oil and with tallow. The whale oil contains a gummy matter which retards the absorption of the oil by the leather; this matter is dissolved or neutralised by the mineral oil. The oils are mixed by being warmed together in a cauldron.

The patentee further states that he uses for currying or finishing leather or for making dubbing the heavy residuum of coal oil by distillation, treating this residuum in the manner thus described:—"I place it in a suitable vessel, and by injecting steam into it, raise its temperature to about 100 degrees Fahrenheit, and then I treat it with about two per cent. of sulphuric acid which

“ causes the crude and heavy matter to settle at the bottom,
 “ whence it is drawn off, the purer material rising to the top. To
 “ this material I then add 10 per cent. each of carbonate of soda
 “ and chloride of lime, and three per cent. of caustic soda.
 “ This mixture neutralises the acid and cleanses the material
 “ which is a fatty oil.”

[Printed, 4d. No Drawings.]

A.D. 1863, July 2.—N° 1648. (* *)

LLOYD, EDWARD. — “An improved composition for water-
 “ proofing, softening, and preserving all kinds of leather, and
 “ articles made therefrom.” The ingredients and proportions
 are, “ castor oil, eight parts or pounds; boiled linseed oil, one part
 “ or pound; beeswax, one part or pound; fir balsam, one-eighth
 “ of a part or pound; tannic acid, one-sixteenth of a part or
 “ pound; or in such other proportions as may be suitable to the
 “ kind of leather to which the composition has to be applied.”
 Suitable coloring matter may be added. The ingredients are to be
 melted and incorporated together. When the composition is to be
 used, it must be heated until liquefied and applied while warm
 with a brush, then rubbed into the pores with the hand and
 allowed to dry into the leather for two or three days: the process
 must then be repeated, and the leather put aside until quite dry.
 The leather may then be blacked and polished; or if it is for
 harness, the usual harness polish may be applied.

[Printed, 4d. No Drawings.]

A.D. 1863, July 3.—N° 1654.


NEWTON, WILLIAM EDWARD.—(*A communication from Leonard Laureau.*)—“Improvements in the treatment and preserva-
 “ tion of skins of all kinds.” “This invention consists in
 “ submitting skins to the action of liquid hydrocarbons (obtained
 “ by distillation from mineral or vegetable tar) for the purpose of
 “ tanning or dressing them, or converting them into leather. It
 “ has been found that if skins be steeped in liquid hydrocarbons
 “ previously to being submitted to the action of the chemical
 “ ingredients used in the ordinary operations of tanning or dress-
 “ ing, the action of the chemical agents on the skins has been
 “ much facilitated, and the tanning or dressing operations con-
 “ sequently considerably shortened.” The process consists;

" firstly, in steeping the skin with the hair on in the hydrocarbons
 " for twelve hours in heavy oil, and for twenty-four hours in
 " light oil, or tar oil for large skins, and half that time for small
 " ones. After having been unhaired and cleansed, the skins are
 " to undergo a second immersion for the same space of time as
 " before. They are then well drained and rinsed in water, after
 " which the operation is continued in the ordinary manner. As
 " regards skins which are to be unhaired by spontaneous action,
 " they are not to be submitted to the first treatment, which is
 " very requisite for skins in the hair which are to be submitted
 " to the action of lime, as fermentation will not take place, or at
 " any rate with great difficulty, in skins impregnated with hydro-
 " carbons." These skins should only be coated over with hydro-
 carbons on the fleshy side.

Small skins may be either immersed in or coated on both sides
 with liquid before being unhaired. After being unhaired they are
 to be immersed in the hydrocarbons and light oils and tar oil for a
 short time.

[Printed, 4d. No Drawings.]

A.D. 1863, August 24.—N^o 2095.

CAPELLO, ANGEL.—" An improved method of and apparatus
 " for glazing morocco leather." The patentee says:—" The
 " machine by which I effect the object of my invention is com-
 " posed of the glazer and the sleeker, differing from each other only
 " in their lower part. A piece of wood placed horizontally pivots
 " on two pins, and the main balance beam is fixed to this piece
 " by two bolts; it is composed of a triangle  and of a piece of
 " wood placed perpendicularly, which may rise and fall according
 " to the requirements of the work between the sides of the
 " triangle which support and guide it in grooves. A piece of
 " iron fixed to the lower part of the balance beam fills in some
 " measure the office of a connecting rod, producing the swinging
 " motion."

" I will now describe the glazer. The end of the main balance
 " beam is furnished at the bottom with two sheet-iron plates,
 " carrying two bearings, on which rolls a pin carrying a glass,
 " crystal, wooden, or other roller, according to the leather and
 " the nature of the work. This roller is between two iron plates
 " which fix it to the pin by a nut, and outside the plate which is

“ fixed to the end of the main balance a toothed wheel is fastened
“ on the same pin. When the balance beam is pushed on one
“ side, a catch prevents the toothed wheel and the roller from
“ turning; this latter dragging along the board. On this board
“ is placed the leather which is being glazed, and while travelling
“ the distance (about a yard) the roller glazes one strip. When
“ the main beam has arrived at the end of this journey, and that
“ by the motion of another small beam, it is brought to the other
“ end of the board, the catch flies on to the teeth of the wheel,
“ and the roller then runs on the leather without glazing it;
“ when it has again arrived at the other end it glazes another
“ strip, and so on continuously, and when the entire skin is
“ glazed, the apparatus is arrested while another is substituted.
“ The board as well as the piece of wood, which pivots, must be
“ flexible; this board rests on two small boards, which are on
“ two wooden screws, serving to raise or lower the board at will.”
There “ is advantage in placing the balance as high as possible,
“ and consequently giving it greater length. The lower part of
“ the main balance is cut and held near the other by a pivot.
“ This section is set in two cheeks; a bolt with nut holds a plate,
“ or rather a slide bolt, which facilitates the changing of the roller.”
“ I will now describe the sleeker or smoother. I have said
“ that the upper part is the same as that of the glazer, namely,
“ a piece of wood on two pins or spindles; a triangle attached
“ to this piece, and another piece of wood which may rise and
“ fall sliding in the triangle. The lower part finishes differently
“ to that of the glazer, it is set in groove pivots on a bolt, and
“ by its arrangement, when the balance moves forward, one
“ part remains stiff, and causes the roller to rub and press on the
“ leather in smoothing it. When the balance moves in the con-
“ trary direction this part opens by the aid of a spring, so that
“ the glass roller remains lifted and no longer touches the leather.
“ The roller in the glazer rolls on a pivot, whereas this one is set
“ in cheeks, between which it is pressed by a spring. The main
“ balance of the sleeker or smoother may come and go with great
“ speed, but for the glazer an average speed is required. The
“ motion is communicated to the small balance, which gives it to
“ the connecting rod, and this latter to the main balance. Any
“ motive power may be used.”

Another arrangement is described by which the balance beam has, at the upper end, two rollers placed on it, between which

passes horizontally a piece of wood, held at the ends by two other pieces of wood, the three being flexible. The balance beam in its march traverses a portion of the first-mentioned piece, and is held in grooves in a rectangular frame, to which a "come and go" motion is given. A very even glazing and sleeking is thus effected.

When it is desired to give great speed to the balance beam, the glazer or sleeker may be ventilated and prevented from becoming too hot by means of a caoutchouc tube passing down to and conveying to the glazing or sleeking roller air introduced into the tube by a ventilator or fan. If desired a water pump may replace the ventilator.

[Printed, 10d. Drawing.]

A.D. 1863, September 8.—N° 2209.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from André Adler.*)—"Improvements in machines for working and preparing skins." The patentee says:—"I take a square frame of such size that the skin to be prepared may be spread over it. This frame is of cast iron or other metal, and is covered with a sheet of cork, over the cork a sheet of vulcanized india-rubber is placed, and the whole is covered and held by" "cowhide prepared in alum." "The frame is furnished at one end with a slide or holder, in which one extremity of the skin to be prepared is secured. It is supported by and is held by flanges on a carriage running on rails, and fitted with a rack parallel to the rails. Across the frame, and fitted in bearings, is a cylinder armed with blades, edged or not, according to the particular operation to which the skin is to be submitted. These blades vary in number from say, 8 to 16; they spring from the middle of the cylinder and pass round it spirally, half of them from right to left and the other half from left to right. At one end of this cylinder is a pulley, and, behind the pulley, on the same shaft, a pinion; the pulley receives motion from a driving band, and the pinion drives a toothed wheel which has, attached to its axis, another pinion in gear with the rack. This arrangement may be modified; for instance, motion may be imparted to the cylinder and to the carriage independently of each other. Suppose a skin to be prepared is spread on the frame, and held by the slide or holder

“ before mentioned, the carriage must be placed in such position
“ that the holder is directly beneath the cylinder armed with
“ blades ; the pulley being put in motion transmits motion to the
“ cylinder, and the carriage moves with the frame in the opposite
“ direction to the rotation of the cylinder, until the other end of
“ the carriage comes beneath the cylinder ; a wedge inside the
“ rack then disengages the pinion in gear therewith, and the
“ frame stops. The attendant then turns the skin round, fixes
“ another end thereof in the slide or holder, pushes back the
“ carriage into the position it occupied at the commencement,
“ engages the pinion in the rack, and the movement recommences.
“ The frame rests on the carriage in a manner somewhat similar
“ to a cover on a box, and may be raised to a certain height. The
“ frame may be supported against the cylinder at any desired
“ pressure by a movable weight placed on a lever connected to a
“ support below the frame.” “ The same machine may be used
“ for cutting and splitting skins by placing in front of the blade
“ cylinder, stretching cylinders with a screw thread in the same
“ direction as the spirals of the blades, but of much less pitch ;
“ they are furnished at their extremity with toothed pinions worked
“ by a chain from a toothed pinion on the axis of the blade cylinder.
“ The blades instead of being placed at right angles to the
“ cylinder, as in the machine first described, are fixed parallel to
“ the cylinders, so as to cut instead of scrape. The surface of the
“ carriage is a plate of polished metal, and four screws placed at
“ the four corners of the frame, regulate the thickness to which
“ the skin is to be cut.”

[Printed, 8d. Drawing.]

A.D. 1863, October 19.—N° 2553.

GILBEE, HENRY.—(*A communication from Louis Poncelet.*)—
“ An improved composition for rendering boots and shoes and
“ other similar articles waterproof.” Two pounds of common
tallow and two ounces of yellow beeswax cut into small pieces
are boiled together. Two ounces of olive oil, and four ounces
of tar are then added to the mixture. The soles, upper leathers,
heels, and any other parts of the boot or shoe receive a coating
of the composition.

[Printed, 4d. No Drawings.]

A.D. 1863, October 22.—N° 2607.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Antoine François Michel*).—"A new material for tanning." The invention "consists in the employment in substitution for oak bark in tanning, of the wood and bark of the chestnut tree. The wood and bark are reduced to coarse powder or dust in the same manner as oak bark, and are used in tanning in the same manner as oak bark."

[Printed, 4d. No Drawings.]

A.D. 1863, November 3.—N° 2717.

EATON, RALPH.—"Improvements in machinery for ruling or marking leather." The "improved machinery consists of a roller or rollers on which the leather is stretched and secured as usual and of a bed plate, slide rest, and marking tools made of discs of hard wood or other suitable material, to which a rapid rotary motion is given by straps or bands and pullies." In the machine described the carriage containing the arms to which the markers are fixed traverses backwards and forwards between the two rollers, on which the leather to be operated upon revolves. The tools or markers have springs by which the pressure on the leather may be adjusted and suited to the different qualities of leather. "A slow traversing motion is given to the slide rest by a screw, and a rotary motion is given to the rollers by suitable gearing, the two motions together with the pressure and rotary motion given to the tool impresses the requisite lines or marks on the leather. When lines or marks in one direction have been given, the skins or leathers are removed from the roller or rollers, and secured to them again, so that at the next operation lines or marks at right angles or diagonal to the first are produced."

[Printed, 10d. Drawing.]

A.D. 1863, December 23.—N° 3246.

RONALD, JAMES.—"Improvements in an apparatus for the conversion of ropes and other cordage into oakum, tow, and paper stuff, parts of which are applicable to teasing and cleansing wool, or hair on skins, and dressing 'waste' tow, wool, hair, and other 'waste' fibres." The only part of this invention which has reference to leather is that which is applicable

for teasing and cleansing wool or hair on skins. The skins to be treated are made to pass between draw or feed rollers "mounted in front of a dressing cylinder or endless apron travelling over a revolving cylinder constructed and actuated in the same way as the dressing cylinders" for which Letters Patent were obtained by the same James Ronald, on the 22nd July 1863, No. 1833, "and which consists of a number of gill teeth mounted on the circular surface of a cylinder, drum, or its mechanical equivalent, revolving upon a fixed eccentric or cam, having its axis on one side of the enclosing cylinder or apron, so that at one part of the revolution of the gills, and the covering cylinder or apron, the gill teeth will project through holes in the outer casing, and at the other will recede back again." An arrangement may be made for withdrawing the skins from the dressing cylinder by reversing the draw or feed rollers.

[Printed, 10d. Drawing.]

1864.

A.D. 1864, January 21.—N° 161.

BAYLEY, THOMAS.—(*Provisional protection only.*)—"Improve-ments in tanning machines." "These improvements consist in causing the skins or hides to be tanned to be continuously moved in the tanning liquid in a tub, trough, or other vessel (herein-after called 'vessel'), which has a circular or otherwise shaped bottom; at each end is a standard carrying a bearing; in these bearings runs a strong shaft, carrying near either end a disk attached to a framing, which forms the arms of two framed discs or rings, which being connected form a wheel or drum, or form the ends of a wheel or drum of nearly the length of the vessel. These two discs or rings are connected by tie rods; each tie rod is enclosed in a leaden or other piping; the discs or rings are also connected by or form supports for the ends of boards which are firmly attached to them, and act as paddles or beaters. The outer edges of these boards push the skins or hides towards one side of the vessel; the skins or hides and the liquor fall towards the bottom of the vessel, rise up on the opposite side thereof, and are again

" caught by the paddles or beaters; the process is continually repeated. On one end of the drum shaft is a toothed wheel, which forms one of a train of four (or, more or less) wheels; the last wheel of such train is upon a shaft somewhat longer than the vessel. This shaft is supported by the standards above the vessel and the drum (quite clear of the drum), and is driven by strap and pulley or otherwise. On the boss of the drum is a clutch box, into which gears a corresponding clutch on a key on the shaft, thus working the shaft and the drum together. To stop the machine the clutches are disengaged by a forked lever which takes into a groove in the second clutch."

[Printed, 4d. No Drawings.]

A.D. 1864, February 17.—N° 403.

WADSWORTH, JAMES.—(*Provisional protection only.*)—" Improvements in the method of softening or dissolving bone, horn, hair, leather, curriers' shavings, raw hides, scraps, wool, woollen rags, or other animal matters." This invention consists in the employment of human or animal urine with or without excrements for softening and dissolving bone, horn, &c. Instead of the urine a composition of all or any of the salts, acids, or constituents of which urine is composed may be used.

[Printed, 4d. No Drawings.]

A.D. 1864, March 9.—N° 593.

CLARK, WILLIAM.—(*A communication from Philomène François Joseph Boyer and Edmond Vaucher.*)—(*Provisional protection only.*)—" Improvements in apparatus for stretching and dressing hides and skins." "This invention relates especially to the mechanical stretching of all kinds of hides and skins instead of by the ordinary hand method. According to these improvements the hides and skins may be stretched to any suitable extent, which is to be regulated by the strength, resistance, and elasticity of the material submitted to the machine, which latter may be made, if necessary, to determine of itself the degree to which the skins are to be stretched." "The machines may be differently arranged, although their essential parts consist, 1st, of a gripper, consisting of a pair of cylinders or other mechanical arrangement

" which grip the skin, and being actuated by a rectilinear or circular motion, force said skin to become stretched at the desired and requisite speed; 2ndly, of a board with a blunt knife or blade placed underneath the skin to be stretched. This board is fixed a little above the level of the skin in order to smooth it; an upper blade furnished with a cylinder bears on the above-mentioned board in order to obtain the whole of its useful effect; 3rdly, of a second gripper or pair of cylinders similar to the before mentioned, placed on the other side of the board; it should be remarked that the movement of this latter gripping pair of rollers holding the skin is slower than that of the former, in such manner that these two pairs of cylinders or grippers impart a differential velocity to the skin; this difference of speed regulates the degree to which the skin is stretched in passing through. In addition to the above, a second blunt knife is employed for cleaning or dividing the skins, as also for removing the hair. Lastly, the blade of the board before mentioned may be replaced by another suitable for stripping hides and skins. Other kinds of instruments such as used in the ordinary dressing of hides may be employed in this machine."

[Printed, *ed.* No Drawings.]

A.D. 1864, April 16.—N° 959.

CLARK, WILLIAM.—(*A communication from Jean Pierre Lesq-Bodart.*)—"Improvements in the preservation of animal matters." This invention relates to a method for preserving meat fresh for a year or fifteen months. Raw hides and all other organic coated matters may also be preserved in the same way. The meat or other substance is loosely packed in an air-tight case on which is soldered a cover. In the cover is a pipe by means of which a weak solution of sulphate of soda, mixed, if required, with gum or dextrine, is let in to fill the spaces between the meat. This invention is not confined to the use of sulphate of soda, but includes the solutions of sulphates, bi-sulphites, hydrosulphites, and alkaline and other nitrates generally.

[Printed, *ed.* No Drawings.]

A.D. 1864, April 30.—N° 1095.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Bartholomew Hoard.*)—"Improvements in tanning." "The hides

"for *stort* leather instead of being placed in pits are put into a fulling tun, which contains a weak decoction of alum if the leather is to remain white, or of catechu, sumac, or other colouring matter, according to the color desired to be given to the leather. The tun is hermetically closed, and rotary motion is imparted to it for some hours to cause the alum or coloring matter to penetrate the pores and prepare them to receive the essence" of turpentine. "The rotation of the tun is stopped the cover removed, and the essence of turpentine is poured in; the tun is closed and again subjected to rotary motion." The hides are tanned in less than twenty-four hours. They are afterwards washed and are beaten and treated in the ordinary manner. For thin skins salt is added to the decoction of alum or other coloring matter.

[Printed, *4d.* No Drawings.]

A.D. 1864, July 2.—N° 1657.

LEE, JAMES.—(*Provisional protection only*).—The inventor says:—"This invention relates, firstly, to the shaving or levelling of leather or hides, and the object of it is to shave and level a 'butt' of leather or a whole hide at one operation or process by mechanical means. Heretofore, this object has been attempted to be attained, but on account of the peculiar nature of leather, or its liability to unequal expansion, or its being subject to stretch more in one part than another when the stretch or the action of the knife has been applied to the full width, the hide has been found to crease and the sharpening of a long knife has also been a difficulty, consequently level or even shaving has hitherto been found impracticable. Now I accomplish the object by having the knife constructed in short lengths, set true, and fixed in a frame or pair of jaws at a suitable distance apart from each other, so that when applied to the hide, each knife or part will act thereon independently of the other, shaving the hide in furrows or strips. The roller on which the hide is supported and conducted in contact with the knife is formed in swells or recesses to suit the knife or *sof*. The hide to be shaved is attached to a roller able of sliding endwise, so that when the hide has knife or knives shaving it in the several parts or roller can be traversed, carrying the hide under

" the knives at the other parts to be operated upon in like manner.

" Secondly, the invention relates to machinery for cutting or paring the ends or edges of leather taper, so as to be spliced or joined evenly together, and machines hitherto employed for that purpose have consisted of a sliding adjustable inclined table to carry the leather under a knife, but which has not effected the purpose with sufficient accuracy. Now my improvements consist in applying a roller under the knife, which is supported upon the inclined table, and raised or lowered thereby, the leather passing over the roller, so that the splicing or cutting is effected against the roller instead of against the table as heretofore. Also, in applying a number of short knives and a roller with swells and recesses, as described in the first part of this invention, for splicing wide widths of leather."

[Printed, &c. No Drawings.]

A.D. 1864, July 6.—N° 1680.

BUGG, FREDERICK JOHN.—"Improvements in the manufacture of pressed leather." Pressed leather is usually made of curriers' shavings, saturated with flour paste, pressed and dried. This invention consists in substituting tanned fleshing pieces, which are waste pieces made by machines employed to split the hides, for the curriers' shavings, and employing as a cement gelatine or animal glue, which is less affected by moisture than flour paste, and when combined with leather becomes more or less acted on by the tanning principles, and is thus rendered more insoluble. The "fleshings" are clamped with a weak solution of animal gelatine or glue, and then left from 12 to 14 hours. They are then passed through a strong solution of glue, and cemented together, and exposed to a pressure of 150 tons in a hydraulic press, and remain under the pressure for 12 hours. When dry the sheet is fit for use.

[Printed, &c. No Drawings.]

A.D. 1864, July 7.—N° 1691.

WILSON, JAMES.—"Improvements in tanning, and in the machinery or apparatus employed therein." The invention is as follows:—In tanks of a square or oblong form are rotating drums "set with axes in bearings at the sides of tanks. These drums are formed of two discs braced together by a

“series of wooden bars fixed to their periphery.” Between these bars are placed moveable sticks or bars to receive the hides or butts. “The tanks being filled with liquor and the drums charged with butts, a reciprocating rotary motion is given to the drums by means of a pinion or pinions fixed on their axes (which work in stuffing boxes to prevent the liquor flowing through from one tank to another, as the drums are worked in pairs or altogether), and by a toothed or racked bar gearing, therewith, the rack being driven to and fro by means of a crank lever and connecting rod from a steam engine or by a water wheel or other power.” Any well known mechanical arrangements can be made use of for effecting the necessary reciprocating motion of the drums, but the patentee prefers “to use pulley wheels reducing the motion by means of pinions and larger cog wheels, with small and larger mitre wheels to strike in and out when required, and also to reverse the motion at pleasure.” By means of pipes the liquor passes from the top of one tank to the bottom of another. Moveable troughs are also used “placed the full width of the tank, placed at the bottom, with holes pierced at the side only to disperse the liquor and steam laterally.

[Printed, 6d. Drawing.]

A.D. 1864, July 9.—No 1706.

SHARP, THOMAS.—“Certain improvements in tanning hides and in the apparatus employed therein.” “The bark is placed in a cylindrical vessel enclosed in another one of larger dimensions, a current of steam being admitted into the annular space between the inner and the outer vessel; within the inner vessel is a revolving hollow shaft supplied with arms terminating in shovels or ploughs. “Immediately behind these shovels are small steam pipes (in connection with the arms of a hollow shaft) which discharge steam into the vacuum or space formed in the liquor immediately in rear of the shovels, and so thoroughly extracts and liquefies the tanning matter from the bark. In the bottom of the afore mentioned steaming apparatus is a small door through which on being opened the bark is discharged after having all the tanning matter extracted by the foregoing arrangement; the tannic acid thus extracted from the bark is drawn off from the vessel through a pipe at the bottom on the side of the vessel; the liquid passes, first through

" a sieve to separate the particles that may be floating in it, then
 " through a vessel containing charcoal, then through another pipe
 " and another charcoal vessel, after which, being drawn through
 " a pipe again and a vessel containing coarse (course) sand, it is
 " discharged in a reservoir and is ready for use.

" The second part of the invention " relates to the treatment of
 " the hides or skins when in the tanning solution, that is to say,
 " within a large reservoir containing the tanning solution are a
 " number of false vats or chambers made of plank and impervious
 " to the liquor; each vat is supported upon a pivot under its
 " centre, and caused to oscillate by having one end attached to a
 " crank or other mechanical equivalent; each of these vats are
 " supplied with four valves, two in the top, and the others in the
 " bottom, so that with every oscillation of the said vats these valves
 " open and close alternately, and the hides which are suspended
 " from copper wires underneath the lid of each vat are kept
 " constantly swinging to and fro, their surfaces being constantly
 " brought into contact with fresh liquor from the continual flow
 " of such liquor from the bottom to the top of the vats through
 " the operation of the valves. "The temperature of the liquor in
 " the large reservoir is regulated by a pump, the suction pipe of
 " which passes through a pipe or receptacle containing water
 " heated to a certain temperature; the suction pipe of the pump
 " is attached to the bottom of the reservoir, the discharge outlet
 " being at the top, thereby causing a continual circulation of the
 " liquor." An index for indicating the strength of the liquids
 " is attached to the large reservoir. "The patentee also causes "the
 " shaft of the ordinary drum employed for securing " to be
 " perforated at both ends, one end supplying water to the leather,
 " and the other carrying it off.

[Printed, 10d. Drawing.]

A.D. 1864, August 5.—N° 1989.

L. KIL, JAMES.—"The invention relates, first, to machinery for
 " shaving and levelling leather, the object being to shave a whole
 " "butt" or hide in one operation. "The knife used " is constructed
 " in short lengths not true and fixed in a frame or pair of jaws at
 " a suitable distance apart from each other, so that, when applied
 " to the hide, each knife or part will act thereon independently of
 " the other, shaving the hide in furrows or strips. "The roller on
 " which the hide is supported and conducted in contact with the

"knife is formed in swells and recesses to suit the knife or parts thereof." The roller rotates on slidable bearings which can be adjusted. The hide to be shaved or levelled is attached to a longitudinal groove in a roller which in revolving draws the hide between the supporting roller and the knife. The roller thus drawing the hide is "capable of sliding endwise so that when the hide has passed the knife or knives shaving it in the several parts or furrows, it can be traversed, carrying the hide under the knives at other parts to be operated upon in like manner.

"Secondly, the invention relates to machinery for cutting or paring the ends or edges of leather taper, so as to be spliced or joined evenly together." A bed is used one end of which rests on excentrics by which the bed can be raised or lowered. A carriage slides on this bed and carries an inclined table, one end of which rests on bearings and the other on a wedge to which is attached a screw spindle by turning which the inclination of the table may be varied and adjusted. The carriage with the table on it is caused to slide on the bed by means of a rack, pinion, and hand wheel. The table can be moved laterally by a hand lever. There are two rollers, the upper one resting on the lower, which rests on the table, both having slidable bearings, so that each roller will have the same surface speed as the table, and will sink or rise with the inclination of the table. The upper of these rollers is under the knife, and the leather is placed between this roller and the knife "so that the splicing or cutting is effected against the roller instead of against the table as heretofore." The leather while being cut is held by a jaw, and the cutting is effected by giving motion to the table, according to the inclination of which the leather is cut.

Thirdly, the invention relates "to the manufacture of mill straps or driving belts, and consists in joining two sheets of leather with their flesh sides together by cement, the grain sides forming the outsides or surfaces thereof, whereby such straps or belts are rendered more durable than heretofore." For this purpose the patentee employs "two winsets or rollers on which the separate sheets after being cut to the proper breadth and thickness, are wound; also a chamber heated by hot water pipes, steam pipes, or other suitable heating means, through which the sheets are passed to be prepared to receive the cement which is applied by brushes or other suitable means on coming out therefrom; or heated cylinders may be employed for this

" purpose; also a series of pairs of pressing or squeezing rollers, betwixt which the sheets are passed in succession and thereby pressed and caused to adhere securely together. Each pair of the said squeezing rollers has a slightly increased surface speed over the preceding pair when in motion so as to stretch the leather while passing betwixt them. Or instead of these rollers a series of screw or lever presses may be employed for pressing or squeezing the parts together, which may be mounted on a slide table, and motion given thereto by rack or screw for drawing the strap forward whilst the pressure is upon it, the strap being then held by a stationary press or pair of jaws whilst the table is moved back to take another length, when the pressure is taken off, but I prefer the rollers. The winnels or rollers have breaks applied to retard their rotation, so as to keep the leathers on the stretch in passing through the hot chamber or over the hot cylinders." Guide plates capable of being adjusted are used, as are also carrying rollers. The patentee applies two adjustable knives to two guide plates to pare or shave the edges of the straps bringing them to uniform widths.

[Printed, as before, drawings.]

A.D. 1864, August 31.—N^o 2137.

STENHOUSE, JOHN. — "Improvements in rendering certain substances less pervious to air and liquids, and also less liable to decay." The way this invention is carried out is as follows: —Paraffine or mixtures of paraffine with beeswax or with any of the vegetable waxes, or mixtures of paraffine with stearine, stearic acid, tallow, or any other of the solid fatty principles, as described in the Specification filed by the same John Stenhouse on July 8, 1862, No. 55, are used; and to them is added about 20 per cent. of linseed or other drying oil, with or without solutions of gutta percha or caoutchouc. The paraffine or paraffine mixtures are melted with the drying oils and poured into moulds, where they harden into solid blocks.

The mixtures of paraffine and drying oils are applied to leather in the following manner: —The skins are heated and a solid block of paraffine mixture rubbed over them, or the mixture may be applied in solution with a brush, or the leather dipped in it; or the mixture may be dissolved in light coal tar, naphtha, petroleum oil, or bisulphide of carbon, and then applied. "It is advisable

"thoroughly to dry the leather before applying the solution, and
 "in cold weather to warm it, so that it may not chill the paraffine
 "solution."

[Printed, 4d. No Drawings.]

A.D. 1864, September 23.—N° 2336.

HENRY, MICHAEL. — (*A communication from Flavie Victorine Augustine Autier.*)—"Improvements in dyeing and tanning, and
 "in preparing for dyeing and printing." This patentee claims
 eleven substantive inventions under this Specification. Ten of
 these appear not to apply to leather, being limited to "wool,
 "woollen yarn, thread, and woollen fabrics," "silk yarns and
 "fabrics," "cotton yarns and fabrics," and cotton velvet. The
 other is a method of fixing tannin on skins and hides. "The
 "astringent portions of alder fruits and flowers, oak, and other
 "matters containing tannin will not only dye black when fixed
 "with salts of iron on threads and fabrics, but they also produce
 "leather when applied to skins and hides, such leather being
 "dyed when in contact with the gelatinous portions of skins and
 "hides; that is to say, wood of oak in a state of powder, sawdust,
 "or shreds may be used instead of and in the same manner as
 "oak bark. To prevent leather being too stiff or liable to crack,
 "and to give it a good grain, about a quarter or third part in
 "quantity of oak bark, or about as much as would cover the skin
 "in the tan pit, may be added."

[Printed, 6d. No Drawings.]

A.D. 1864, October 7.—N° 2477. (* *)

KBMP, HENRY, and KEMP, FRANCIS JOHN.—"Improvements
 "in the preparation and hardening of leather for boot and shoe
 "soles, straps, and bands, and other purposes." The leather is
 placed in a close vessel and covered with a liquid compound of
 wood tar dissolved in methylated spirit or pure spirits of wine,
 caoutchouc or gutta percha or other suitable gum dissolved in
 naphtha or other solvent, and a proportion of dissolved shell-lac.
 The air is exhausted from the vessel, and the "process of impreg-
 "nation may be facilitated by forcing air under pressure into the
 "cylinder above the compound." Modifications of the process
 are detailed in the Specification; but the patentees do not confine
 themselves "to any particular mode or process for injecting the
 "leather or arranging the materials." The invention is especially

applicable to shoulder leather, which is "more porous and lean" valuable than some other parts of the hide." For harness, straps, soles, and the like, the leather should be first cut or stamped to the required size; but skins may be subjected to the process, whole or in pieces. In all cases the leather must afterwards be submitted to mechanical pressure, to expel the superfluous liquid, and then set aside to dry.

[Printed, *ed.* No Drawings.]

A.D. 1864, October 15.—N° 2556.

DAVID, JACOB.—(*A communication from William Adamson.*)—(*Provisional protection not allowed.*)—"An improved mode of "economizing the manufacture of useful articles of leather." The inventor proposes to cut out from the untanned skin pieces of the size and form required for useful articles of tanned leather, such as sole and heel pieces, and tanning the pieces so cut out. By this means expense is saved, and time as well, for small pieces take a shorter time to tan than larger ones.

[Printed, *ed.* No Drawings.]

A.D. 1864, October 15.—N° 2559.

CLARK, WILLIAM.—(*A communication from Jules Montier, Lambert Dietenbacher and Abraham Worms.*)—(*Provisional protection only.*) "Improvements in the preparation of artificial "wax." This invention relates to the production of stearic wax. That intended to be used for ordinary unglaed leather is composed "of 300 parts of stearic acid, 40 parts of resin, and 40 parts "of common soap," with a sufficient amount of lampblack. For glaed leather a wax composed of 100 parts of stearic acid and 20 parts of resin and lampblack is used.

[Printed, *ed.* No Drawings.]

A.D. 1864, November 2.—N° 2704.

MITH, WILLIAM.—(*A communication from Almond Sullen.*)—"Improvements in tanning leather and in the apparatus to be "employed for that purpose." The patentee says:—"Within a "strong vessel which is capable of being afterwards closed her- "metically and resisting considerable internal pressure, I place "first a layer of tan to the thickness of about three inches, "then a hide, say an ox hide, then a thickness of tan, then "another hide, and so on alternately until the vessel is filled;

“ the cover is then securely fitted and tanning liquor which
 “ has been prepared from oak bath and concentrated and gradu-
 “ ated by evaporation (according to the stage of the process) is
 “ run into the vessel which is filled quite full from a reservoir
 “ and the connection therewith shut off. I then apply pressure by
 “ means of a pump which is used to force in the additional
 “ quantity of tanning liquor, to make up any diminution in bulk
 “ from leakage or other cause.” “ Thus ” “ I separate the hides
 “ by means of layers of tan within a hermetically closed vessel of
 “ great strength, and I apply from time to time the tanning liquor
 “ of increasing strength for increasing periods, in each case under
 “ an increase of pressure, and by this means I am enabled to tan
 “ the thickest hides in a period of about forty-five days.” The best
 temperature is stated to be from 18° to 20° Reaumur, and the
 best pressure “ for completing the process ” is about 600 pounds
 to the square inch for the thickest hides. The vessel used is of
 metal “ having a cover or covers capable of being readily removed
 “ and replaced air-tight.” “ The superior part of the tanning
 “ vessel should be fitted with an air vessel having a manometer
 “ mounted thereon, and there must be a connection also with the
 “ force pump.”

[Printed, 10d. Drawing.]

A.D. 1864, November 23.—N° 2927.

PFANHANSER, FRANÇOIS.—“ An improved process of tanning.”
 After stating that the hides are to be prepared for the tan pit in
 the usual way the patentee says:—“ The substance which in my
 “ improved process replaces oak bark or other tannin is obtained
 “ by transforming sulphate of iron by means of a chemical opera-
 “ tion furnishing a solution possessing the property of tanning
 “ the stoutest hides in a few days.”

“ The transformation of the nature of the sulphate of iron
 “ is very simple, and is effected by burning it in an oven on a
 “ cast iron platform heated from beneath until red hot, and the
 “ substance being constantly moved about becomes transformed
 “ into a powder of a reddish colour, when it is removed and the
 “ operation repeated for a fresh supply.

he liquid is obtained by pouring water into an earthenware
 or other suitable receptacle, then adding a part of the
 tance obtained as above described, which rapidly dissolves

“ if continually stirred with a stick or ladle, the liquid is then
“ allowed to rest and deposit until perfectly limpid, when it is
“ run off. This liquid being very strong serves to prepare the
“ liquid in the tan pits or vats according to the degree of strength
“ which it is desired to give it, using for this purpose Baumés’
“ hydrometer or any hydrometer which the tanner may prefer.”
The hides are first immersed in a solution of about half a degree
Baumé, are then washed and are afterwards immersed in a series
of solutions each slightly stronger than the preceding one, being
subsequently washed and immersed in a solution of soap.

[Printed, 4d. No Drawings.]

A.D. 1864, December 15.—N° 3110.

HANCOCK, CHARLES, and SILVER, STEPHEN WILLIAM.—

“ A new manufacture of certain flexible elastic waterproof sheets,
“ surfaces, compounds, and substances, and the application thereof
“ to various purposes.” Caoutchouc either alone or in combina-
tion with gutta percha has hitherto been used for the manufacture
of elastic waterproof articles and compounds, but certain disad-
vantages are incidental to their use. This invention consists in
employing a mixture of the milk of caoutchouc and the milk of
ballatta. These substances are mixed together in equal propor-
tions, or where great elasticity is required two thirds of caoutchouc
may be used to one third of ballatta. The air must “ be excluded
“ from the mixture until required for use, as exposure to the air
“ has a tendency to produce coagulation which causes some diffi-
“ culty in the after working.” Pigments, powder, sulphur or
colouring matter may be ground or mixed in water, flour, paste,
size, or gum, and then added to the mixture. The compound
may then be rolled into sheets, and made into blocks alone, or it
may be laid upon leather, paper, &c. to render them waterproof.

[Printed, 4d. No Drawings.]

1865.

A.D. 1865, January 19.—N° 168.

LABROUSSE, TASSO, and KEILY, JOHN.—(*Provisional pro-
tection only.*)—“ This invention has for its object improvements

“ in dyeing leather, and consists in the application of aniline or analogous colors in the following manner :—The surface of the leather is first brushed over or coated with oil of vitriol diluted with warm water, then the violet, blue, purple, or other aniline or analogous dye is applied by a brush or otherwise, after which oil of vitriol diluted with warm water is again applied.”

[Printed, 4d. No Drawings.]

A.D. 1865, January 20.—N^o 172.

TURNERY, JOHN, the younger, and WOOD, GEORGE.—“ Improvements in machinery or apparatus employed for fluting, dicing, cross-graining, glazing, and all kinds of jiggered work on skins or hides, and having a self-acting table and revolving friction wheel or roller.” The “ machinery or apparatus comprises a table or platform to receive the skins or hides to be operated upon. This table or platform is made to slide upon a stationary framing, at or near the centre of the length of which on each side thereof are secured uprights, which support the ends of a framing which lies above the table. This framing has a rack on one or both sides near the top of the table; these racks receive a spur wheel or wheels, secured on either end of a spindle, upon the centre of which is a wheel or roller having a plain or fluted surface.” The rollers may have any desired pattern cut on their surface. The spindle is supported in bearings one of which is capable of adjustment vertically to enable the pattern roller to be set true with the surface of the table. The bearings of the spindle are held in a frame capable of adjustment vertically, and which may be weighted as required by means of a weighted bracket sliding on a lever, or a slotted lever, in which latter case the weight is placed upon a screwed bolt having its head shaped to slide in the slot of the lever. “ The frame and wheel have motion imparted to them so that they may travel across the table from side to side; for this purpose they are connected with a rod attached to the upper end of a rocking lever moved to and from a connecting rod attached to a wheel under the table, which is mounted on a shaft furnished with pullies for receiving motion from any prime mover. This wheel is also provided with more trucks, which revolve upon and are carried round

“ with it and strike upon the tails of clawkers or drivers which
“ rack or drive two wheels, one wheel at either end of an axle,
“ which works in bearings on the under side of the table, and
“ lies in a frame attached to the table. The wheels are toothed,
“ and take into a rack on each side of the main framing, so that at
“ every revolution of the large wheel, the table or platform and
“ the skin or hide on it will be twice racked or moved along the
“ distance of the breadth of the abovenamed plain or fluted
“ roller.”

[Printed, 2s. 6d. Drawings.]

A.D. 1865, January 31.—N^o 270.

COX, WILLIAM HINKINS.—“ Improvements in tanning hides and
“ skins and in apparatus employed therein.” A frame is used
with transverse bars or cords from which the hides to be tanned
are suspended. The bars or cords can be moved to and fro so
that the hides may be made to touch one another or not as desired.
The frame can be lowered into and hoisted out of the pit by an
overhead traveller or other convenient mechanism. “ Inclined
“ partitions are applied in the pit which are preferred to consist
“ of parallel fillets or bars, the edges of which come near to but
“ do not touch each other.” There is one of these at each end
of the pit; more may be used if desired. When the hides are
first lowered into the pit they do not touch each other so that
the liquor may flow freely between them. After a time half the
bars are moved towards one end of the pit and half towards the
other end, so that the hides rest on or against each other and
against the inclined partitions, so as to exclude the passage of the
liquor between them. The hides are immersed in these two
ways during the process of tanning.

[Printed, 4d. No Drawings.]

A.D. 1865, February 14.—N^o 413.

HARTON, GEORGE.—“ Improvements in water-proofing skins,
“ hides, and leather.” The patentee says:—“ The object of my
“ invention is to render waterproof and pliable skins, hides, and
“ leather, boots, shoes, harness, bands for steam engines, and
“ other ordinary articles made of leather, and usually exposed to
“ wet or damp.”

"The nature and description of my invention consists in placing skins, hides, and leather that have been previously tanned or preserved in a vessel or chamber made perfectly close, and in exhausting the air therefrom and forcing into the vessel a solution of india-rubber or a solution of gutta percha, with the addition to either solution of a small quantity of copai, gum cowrie or other known and suitable resinuous gum insoluble in water, or of a small quantity of wax or spermaceti."

[Printed, 4d. No Drawings.]

A.D. 1865, March 6.—N° 631.

CLARK, WILLIAM.—(*A communication from Wilhelm Martz.*)—(*Provisional protection only.*)—"This invention relates to improvements in the preparation of hides previous to the tanning operation. After being deprived of the hair by means of lime the pores of the hides generally contain lime either in a caustic carbonic or sulphuric form, and also in an insoluble condition. According to this invention I eliminate these matters which prevent the hides from being properly tanned, either by obstructing the pores, or from the formation by means of the tan of tannates of lime. This elimination is effected without injury to the hides by means of a very weak solution of sulphuric acid, after depriving the latter of the iron it contains. The hides are steeped in this solution for a suitable time, when the whole of the lime, whatever may be its form, is transformed into sulphuric lime. This latter which impregnates the pores of the hides is decomposed by means of a solution of common salt or chloride of calcium (NaCl_2), or a solution of chloride of potassium (KCl_2), or oxymuriate of potash, said solutions being completely deprived of iron. On this decomposition being effected I entirely remove the lime or other foreign matter by washing the hides in pure water."

[Printed, 4d. No Drawings.]

A.D. 1865, April 22.—N° 1126.

BEAUX, EMILE STANISLAS, and PANNIFEX, EDWARD.—(*Provisional protection only.*)—"A new process of tanning and other skins." The skins are placed in a vessel with an emulsive liquid, and the vessel is caused to rotate. The invention consists in the method of pre-

paring the emulsive liquid. To constitute this three liquids are mixed together. These are:—First, a liquid prepared in a close vessel from oak or birch bark and catechu or sumach; secondly, a decoction of oleaginous seeds to which fatty matters and water are added, the whole being reduced to a density of 45 Beaumé; thirdly, a solution of certain metallic salts, to which are added some of the more recently employed antiseptics.

[Printed, 4d. No Drawings.]

A.D. 1865, May 3.—N° 1239.

CLARK, WILLIAM. (*A communication from Jules Ducommun.*)—

“Improvements in the means and apparatus used for stretching
“woven fabrics and other materials.” “The principle of the
“present invention is based on the elastic or stretching pro-
“perties of india-rubber, and on the adhesion obtained by its
“application on any suitable surface. The invention consists
“in an improved means of stretching all kinds of fabrics or
“materials, such as knitted fabrics, leather, skins and others,
“either wholly or partially, by their application between sur-
“faces of india-rubber under the following conditions:—1st,
“between two surfaces of india-rubber, each of which is stretched;
“2ndly, between an india-rubber surface and a surface other
“than india-rubber, the latter causing the first to be stretched;
“3rdly, or lastly, by simply utilising the property possessed by
“india-rubber of firmly adhering to any surface on which it is
“applied, and by separating one from the other one or more
“surfaces of india-rubber on which is applied the material to be
“stretched.”

The apparatus employed consists of two cylinders of wood, cast-iron, or other material grooved on their peripheries. The grooves may be parallel or at right angles to the axis of the cylinder, or may be helically disposed, or a cylinder with projecting spherical parts corresponding with hollows in the other cylinder may be employed. The cylinders are so arranged that each projection on the one cylinder fits into a groove of the other. One or both cylinders are furnished with a covering of india-rubber, the two ends of which covering are connected to two moveable parts sliding on the shaft, so that the covering may receive the desired amount of tension. The cylinders being then geared together in such a way that each projection on the one takes into a correspond-

ing groove in the other, the india-rubber and the material on it will be forced into the grooves and stretched.

To increase the length of the fabric in the direction of the warp, two cylinders with india-rubber covering, but ungrooved, are used. "When the two cylinders are brought together they compress the two india-rubber surfaces which being moveable on the cylinders the latter by their rotating movement will compress the india-rubber, and naturally cause the fabric between them to be stretched. Endless aprons may also be substituted for the india-rubber covering."

[Printed, 2s. 4d. Drawings.]

A.D. 1865, June 7.—N^o 1554.

HENDERSON, ARTHUR CHARLES.—(*A communication from Emile Stanislas Beaux and Edward Pannifer.*)—"Improvements in tanning hides and in apparatus connected therewith." The invention consists in the preparation of and the tanning by means of the three following liquids:—1, "a decoction of 4½ pounds of green oak or birch bark, 4½ pounds of catechu, and 2½ pounds of sumach, and 12 gallons of water; this liquid is prepared in a closed vessel or digester, such, for instance, as the Papinian pot, which permits of the temperature being raised a little above the atmospheric pressure, and yet not sufficiently high to disorganize the substance; the whole is reduced to a density of 45 degrees Reamur" ["Qy. Beaumé"] the quantity above mentioned being sufficient for 1 cwt. of hides. 2, a decoction prepared by the same method "from 2½ pounds of oleaginous seeds, such as linseed, colza, lichen, or marine moss, and the like, to which are added tallow, olein, or other fatty matters, which produce a mucilaginous and unctuous mixture." 3, "a solution of the following metallic oxides or salts, such as chloride of iron, sulphate of alumina or chromium, in the proportions of from 2 ounces to one pound, according to the strength of the same, and the quality of the leather to be produced, to which are added the recently employed antiseptics, such as pinic acid, creosote, or their equivalents, in the usual proportions," i.e., from $\frac{1}{1000}$ to $\frac{1}{100}$ according to the degree of purity. The liquids thus separately prepared are mixed together, and form an emulsive liquid. For tanning, a vessel supported by axles turning in bearings is used. Inside the vessel are a number of

triangular pieces of wood rounded at the edges, and between these are projecting pieces of wood "of different heights and sizes. "which act as fulling sticks." The emulsive liquid is poured into this vessel, and the skins prepared for tanning in the usual manner are placed in it. The vessel is then closed, and a rotatory or oscillatory motion communicated to it.

[Printed, 8d. Drawing.]

A.D. 1865, June 17.—N° 1635.

CLIFTON, HENRY EVERARD—(*Provisional protection only*).—"Improvements in apparatus for 'lap' and 'surface shaving,' the splitting and bevelling of leather and other like substances "in sheets and strips." This invention has for its object an improved apparatus for facilitating the "lap" and "surface "shaving," and splitting of leather. "This improved apparatus "consists of, say, an horizontal cylinder, the periphery of which "is formed with two or more segments of a circle, so as to form "a cam or series of cams. When more than one cam incline is "used they are varied for the purpose of cutting longer or short "lap shaves as required."

The cylinder is fixed in suitable bearings which may be elevated or depressed, and just above it is a stationary knife which may be elevated or depressed, advanced or receded. In front of the knife is a pressing roller to keep the leather strips or other material against the face of the cam.

"The action of the apparatus is as follows:—When used for " 'lap shaving' the leather or other substance to be cut is passed "underneath the knife and pressing roller to the end of the "curved surface, which is brought in position therefor when the "cam cylinder is caused to partially rotate on its axis, which "brings the leather in contact with the edge of the knife, and as "the cylinder advances the inclined plane rises to the knife until "it arrives at the end of a segment of a circle, thus causing the "leather to be cut away to the required bevel so as to be of the "required form to form a lap joint with a counterpiece. When "the apparatus is used for 'surface shaving' or splitting, the "cam cylinder is turned on its axis until it gives the exact "required thickness between the surface thereof and the knife, "when the cylinder is locked in position, the leather being passed "under the pressing roller, and between the knife edge and the

" cylinder, when the leather is drawn through by hand or any convenient mechanical arrangement. The upper surface or sheet of the leather passes over the top of the knife, and the lower sheet or surface below the knife. The operation of splitting is performed in precisely the same manner as that of plain surface shaving. When the apparatus is to be used for rounding or bevilling, the only modification required is to substitute for the plain knife a cutter or cutters to give the required contour."

[Printed, 4d. No Drawings.]

A.D. 1865, July 29.—N° 1962.

ABEL, FREDERICK AUGUSTUS.—"Improvements in compounds for waterproofing and insulating purposes." The first part of this invention refers to waterproofing textile or felted fabrics, paper, or leather, "and consists in employing for that purpose compounds consisting of india-rubber, whether in its natural state or vulcanized, or gutta percha, made to combine by the aid of heat with paraffin or beeswax, or with a mixture of both." The proportions in which these materials are used may be variously modified. In making the compounds of gutta percha the beeswax or paraffin is melted, and the gutta percha added, by preference, in shreds or small pieces, the materials being maintained at a temperature of 200° to 220° Fahrenheit. In using the natural or vulcanized india-rubber it is taken in small pieces or in a masticated form, and heated with the paraffin or beeswax to a temperature 212° to 240° Fahrenheit. It is advisable not to heat the materials above 260° Fahrenheit. Similar compounds may also be made by heating india-rubber or gutta percha with stearine or spermaceti, or other solid fatty substances.

Similar compounds may also be used for insulating and protecting telegraph and other wires, ropes, or cables.

[Printed, 4d. No Drawings.]

A.D. 1865, August 2.—N° 2007.

TYLER, JOHN HENRY.—"Improvements in apparatus used in rolling leather." The "invention relates to improvements actuating the ordinary gun metal roller and weighted used in rolling leather." A rack is attached by a brass joint or otherwise "to a weighted box attached to

" which is the roller, and is " actuated by a pinion keyed on
 " a shaft, mounted between two frames of the required height,
 " and which pinion is driven with two pairs of fast and loose
 " strap pulleys on the same shaft, which are thrown in and
 " out of gear by a suitable clutch or clutches, as hereinafter
 " mentioned, or the two single strap pulleys may be used with
 " friction clutches, or clutches of any other description; or
 " the machine may be driven by means of bevil gear, instead of
 " pulleys with clutches of communication in the same manner,
 " and driven by a corresponding wheel on a driving shaft in
 " either a horizontal or perpendicular or other direction." In the
 drawings a double clutch is shown sliding between the two pulleys
 on the shaft carrying the pinion, but rotating with the shaft. The
 pulleys revolve loosely on the shaft and receive motion in con-
 trary directions; by means of the clutch they give alternately
 motion to the shaft. Below the shaft is an oscillating shaft
 mounted on bearings. On this oscillating shaft is an arm rising
 so as to be interposed between two tappets placed on the lower
 side of the rack. On this same shaft is a quick threaded screw
 which fits into a nut mounted in swivel bearings in a loop of a
 lever pivoted on a fulcrum beneath, and having a fork taking
 into a circular groove round the double clutch which is thus
 put in gear with each pulley alternately as the arm on the shaft is
 moved alternately one way and the other by the tappets. The
 shaft moving the rack is thus caused to revolve in different direc-
 tions alternately, and by means of the pinion the rack and
 weighted box holding the roller are driven backwards and for-
 wards. The rack is supported at one end on grooved rollers,
 at the other by a sliding hanger traversing on a horizontal bar
 above. On the same bar is a guide piece carrying a bridge
 frame, from which the weighted box depends. The height of the
 weighted box and roller can be adjusted by a screw and hand
 wheel.

[Printed, 10d. Drawing.]

A.D. 1865, August 18.—N^o 2136.

GEDGE, WILLIAM EDWARD.—(*A communication from Adolphe Bel.*)—(*Provisional protection only.*)—The invention consists in
 a method of reducing the thickness of calf skins at the head,
 where they are thicker than elsewhere. The apparatus used con-
 sists of "a case or chest serving as foot or base to a cast-iron

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“ column fixed upon it, the said column itself supporting a plate
 “ or tablet also of cast iron, which comes between two arms furnished with bands of polished steel, on which a knife is made
 “ to slide. The head of the calf skin is placed on the tablet, and,
 “ as it is not on the same level as the arms by causing the knife
 “ to slide on these latter the whole of that part of the skin which
 “ comes above such level is removed. The level of the tablet is
 “ varied by raising or lowering it, which is effected by means of
 “ its support, and a bolt passing into a slide bar with which this
 “ latter is furnished. The operation in question takes place
 “ directly after that known as river work, and a workman can
 “ prepare from 80 to a hundred skins per hour.

“ It will be evident that although calf skins only are above
 “ mentioned this invention may be used to reduce the thickness
 “ of parts of other skins or hides.”

[Printed, 4d. No Drawings.]

A.D. 1865, August 30.—N 2231.

JOHNSON, JOHN HENRY.—(*A communication from Emmanuel Desire Coëz.*)—“ Improvements in tanning and in the preparation of extracts to be used therein.” The patentee employs
 “ pure extracts of tanning obtained from tan, sumac, and more
 “ particularly from what is known as divi divi or the fruit of the
 “ Brazil wood tree, which is known also as Lima wood, or sapin
 “ wood.” The patentee states that he prefers the extract of this
 “ wood, in all cases, and thus describes his method :—“ I treat one
 “ part of natural divi divi with eight parts of boiling water, and
 “ the liquor, after cooling and settling for eight days, is then
 “ decanted off and filtered. The deposit, when removed, supplies
 “ a liquor charged with useful principles, which may be subsequently used for treating a fresh mass. The washing water
 “ which is used for cleansing the filters should be mixed with the
 “ liquor intended to be concentrated, which I prefer generally to
 “ carry up to a strength of 30 Beaumé.” For use the extract is
 “ dissolved in boiling water, “in order to thoroughly divide the
 “ rules.”

1, 4d. No Drawings.]

A.D. 1865, September 6.—N° 2282.

RY HARRISON. — (*Provisional protection only.*)—
 its in machines for splitting, shaving, and paring

" hides, skins, and leather." The inventor says :--" I construct
" an oblong frame of iron or other material suitable for the pur-
" pose, across which I arrange a number of spindles parallel with
" each other, and at convenient distances apart, to run in boxes,
" or on adjustable centres set in the sides of the frame, which
" spindles are made to revolve by the usual method by means of
" pulleys and chords [cords] or bands connected with a wheel or
" drum, which latter is connected with the motive power. I attach
" a disk or circular knife to each spindle near the end, in such a
" manner that the faces of the circular knives, with their cutting
" edges, shall be in a line parallel with one side or front face of
" the frame containing the spindles, so that when the frame is
" oscillated horizontally in the direction at right angles with the
" longer axes of the spindles, the cutting edge of each disk or
" circular knife will follow in the grooves cut by the others. I set
" the whole number of spindles and disks in a plane, I construct
" the frame holding the spindles to run in guides in such a
" manner that while the machine is in motion it will give two
" distinct and separate movements to the spindles and disks or
" circular knives, viz., a rotary motion and an oscillating move-
" ment, which latter I obtain by attaching a connecting rod to
" one end of the frame containing the spindles, the other end of
" which connecting rod I attach to an eccentric or crank, which
" latter is connected with shafting for the purpose. For split-
" ting, shaving or paring hides, skins, and leather, I adjust the
" knives with their faces and cutting edges opposite a straight
" bar or roller, leaving sufficient space between the edges of the
" knives and straight face of the bar or roller to insert the hide,
" skin, or leather, which is drawn through the space while the
" machine is motion, in such a manner that the whole surface of
" the hide, skin, or leather is cut by the disks or circular knives
" to the desired thickness. For the greater facility of working
" the said invention, I cause one moiety of the spindles and disks
" to revolve in opposite directions, so that the cutting edge of the
" disks or circular knives operating on the hides, skins, or leather,
" will cut from the centre of the hides, skins, or leather towards
" the edges, thus keeping the material stretched out smooth and
" flat while being operated upon."

[Printed, 4d. No Drawings.]

A.D. 1865, September 15.—N° 2357.

SOURZAC, LOUIS GUSTAVE, and BOMBAIL, LOUIS.—"Im-
proved means for rendering leather more durable and flexible."
The invention consists, first, in the composition of a bath com-
posed as follows:—"Introduce in about five quarts of water
about two and a quarter pounds of red tartar, about five ounces
of common salt, about two ounces of Brazil wood; the whole
is boiled during half an hour, and kept for use, the residue
remaining at the bottom of the bath, so as to retain its entire
strength and efficacy. The invention consists, secondly,
in the composition of a coating composed as follows:—"Take
about thirteen ounces of siccative linseed oil, known in com-
merce by the name of fatty oil, about thirteen ounces of ordi-
nary linseed oil, about one and a half of orchanet; mix the
whole together, and place the mixture on a gentle fire during
two hours to reduce it to about one pound and one ounce.
When the mixture or coating becomes cold add to it about
seventeen ounces of dried garlic peeled and crushed, and about
one ounce of burnt bread crust reduced into small pieces."
One layer of the coating is applied to the hair side of the leather,
and when the coating has been absorbed, the leather is placed in
the bath for forty-eight hours. It is then dried, in the shade,
and is coated once or several times on the hair side until the
flesh side has a black colour similar to that produced by the
coating on the hair side. After this it is again dried for twelve or
fifteen days.

[Printed, 4d. No Drawings.]

A.D. 1865, September 30.—N° 2516.

MILLER, JOHN WILLIAM MOORE.—The invention consists in
a method of rendering skins waterproof and durable. Two solu-
tions are used. One "is composed of six to eight ounces of india-
rubber dissolved in one gallon of rosin oil, cotton oil, poppy oil,
cod oil, or any of the fixed and drying oils. The other solution
consists of one pound of gum thuss or frankincense to a gallon
hylated spirit, or methylated "finish," as it is termed in
." These two solutions the patentee prefers to mix
every gallon of the mixed fluids should be added
f vegetable or japan wax rendered fluid by heat,"

and then "from half a pint to a pint of best spirits of turpentine " to every gallon, and one fluid ounce of nitro-benzole. Care " must be taken in mixing the japan wax to see that it is not too " hot or hot enough to set fire to the whole ; and it must be well " mixed before the turpentine is added. The nitro-benzole should " be added last." The leather, which must be quite dry, is placed in an air-tight chamber. The air is exhausted and the mixed solution admitted. After the leather has been thoroughly saturated, it is cleansed with a slicker and dried. The leather may then be advantageously rolled in a mill, and is afterwards cleansed by a piece of tow soaked in turpentine, or finish and polished with the ordinary currier's size.

[Printed, 4d. No Drawings.]

A.D. 1865, October 7.—No 2585.

BONNEVILLE, HENRI ADRIEN. — (*A communication from Prosper Dumas.*)—"Improvements in apparatus for preparing " skins for tanning, and for currying or dressing the same." A drum is used "having something like the form of a barrel, that is " to say being larger at the centre than at the ends." The drum revolves on adjustable bearings, and motion is given to it by a hand winch and toothed wheel or otherwise. Above the drum, over its whole length, is an endless band passing over two pulleys in such a manner that the two portions of the endless band which are stretched between the pulleys are parallel with the axis of the drum. The axes of the two pulleys are horizontal and at right angles to the axis of the drum, and one of them has horizontally adjustable bearings, so that the endless band may be stretched. Motion can be given to the other pulley, so as to cause the endless band to revolve. At suitable distances throughout the whole length of the endless band are tools or stones for unhairing or currying, or for performing any other operation usually performing by hand. The hide is placed on the drum, and the band is then caused to move. The stones, tools, &c., dress or scrape the surface of the hide the drum being turned when necessary so as to expose a fresh portion of the hide to the action of the stones, &c. The hides are watered during the process by means of a pipe placed over the drum.

[Printed, 8d. Drawing.]

A.D. 1865, October 7.—N° 2591.

HARRIS, WILLIAM.—“Improvements in tanning or treating
“hides, applicable for machine bands and other purposes.” The
patentee says :—“I take hides and skins, after being freed from
“the hair, offal, and other matters in the usual manner, and tan
“them in a liquor consisting of one hundred gallons of water,
“and half a pound of sugar of lead, combined with a sufficient
“quantity of oak bark to color the skins. The hides are steeped
“in this liquor and drawn out four times a day; I add oak bark
“every day, stirring and mixing the whole together. When the
“hides are worked through the liquor in this way for three weeks,
“I then remove and treat them in a fresh liquor consisting of
“one hundred gallons of water, four ounces of white copperas,”
“two ounces of alum and half a peck of oatmeal, adding oak
“bark as aforesaid;” the hides are to be “worked and steeped
“in this liquor” “and drawn three times a day, stirring and
“mixing the contents of the pit well together. The hides are
“treated in this solution for a fortnight (more or less), after
“which they are well dubbed (treated with dubbing), and
“subsequently tacked in frames and hung up to dry.”

[Printed, 4d. No Drawings.]

A.D. 1865, November 9.—N° 2891.

NEWTON, WILLIAM EDWARD. — (*A communication from William Gibson.*)—“Improvements in preparing the surfaces of
“paper, leather, woven and other fabrics and substances for
“receiving photographic pictures, engravings, lithographs, and
“prints, and for rendering such substances fire and waterproof.”
This invention, so far as it applies to leather, consists in enamelling
it by the successive application to it of an adhesive mixture or
body and an astringent mixture or solution. For this purpose
a gelatinous or adhesive mixture, composed of gelatine or any
animal glue, albumen, gluten, or any mixture of these sub-
stances is made to combine with the material to be operated on.
It is given to this gelatinous or adhesive mixture by incor-
porating with it, by preference, clay or other aluminous earth, or
lime, or a mixture of clay and zinc. “The composition
thus prepared is subjected to the action of any suitable astrin-
gent which is capable of rendering the gelatinous

"mixture or body insoluble in water. The astringent solution preferred is gallic acid, boracic acid, or tannin dissolved in water, but any other astringent which will produce the above-named effect may be substituted." Any fibrous substance so treated will be made fire and waterproof, and as its surface will be insoluble photographic pictures and prints may be taken on it.

[Printed, 4d. No Drawings.]

A.D. 1865, December 6.—N° 3118.

CLUDERAY, WILLIAM SAMUEL.—(*Provisional protection only.*)

—The inventor says:—"My invention has for its object the equalization of the thickness of tanned skins or portions of the same. For this purpose upon a suitable framework I mount transversely a roller having cutters wound spirally upon its periphery, a plain cylinder being placed immediately underneath the same. In front of the cutting cylinder I place a pair of retaining or holding rollers, also a detaining bar, which is raised or lowered through a foot lever. An endless cloth or band is also placed in front of the machine. Behind the cutting roller a rotating brush is placed. Ordinary and well-known gearing is used to actuate the various rollers and the endless band. A skin being placed upon the endless band or cloth it is carried to the detaining rollers, which move at a slow speed, passing through these, however, it reaches the cutting roller (which revolves at a high velocity), and is shaved to the required thickness, the roller underneath the cutter being adjusted as occasion requires. During the operation the skin is firmly held by what I have termed the detaining rollers and the detaining bar, the latter placed in close proximity to the cutting roller. The brush placed at the back removes the shavings."

[Printed, 4d. No Drawings.]

A.D. 1865, December 19.—N° 3277.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Sewell Brown Noyes.*)—The invention, which is for improvements in machinery for splitting leather, &c., "consists in regulating

"the speed and arresting the motion of the feed cylinder by the vibrations of the knife, whereby the leather is prevented from feeding and crowding against the edge of the knife during the interval between its vibrations; and the invention also consists

" in extending the apron over a considerable portion of the outer surface of the feed cylinder, and forming the pressure shoes or their equivalents separately and independently of each other," thus allowing a hide to be cut when green with equal facility as when dry, the pressure shoes or their equivalents yielding to the inequalities of the hide." A large cylinder is used revolving on adjustable bearings. Extending longitudinally over the cylinder is a bar "in which are placed a row of pressure shoes," which are made separately and operate independently of each other." Each shoe is pressed down by a spiral spring. There are two pressure rolls, the upper of which is almost vertically over the axis of the large cylinder, and the lower of which is some distance lower down on the circumference of the large cylinder. An apron passes round these rollers, and also passes round V-shaped pieces secured at each end of the upper roller to the bearing, and extending beyond the roller on the side furthest from the lower roller. The extremity of this V-shaped piece is close to the pressure shoes which are between the V-shaped piece and the cutting knife which splits the leather. The knife is placed longitudinally over the large cylinder, and is held by a bed piece and a plate, so that it can vibrate longitudinally but not vertically. The knife projects a little under the pressure keys, i.e., between them and the large cylinder. The leather or green hide to be split is fed between the lower roller and the large cylinder with the grain side downwards, and is pressed down by the apron and carried by the motion of the cylinder round under the upper roller, the V-shaped piece, the pressure keys, and against the knife. A to-and-fro motion is given to the knife by a connecting rod attached to one end of the knife, and to a crank on a crank shaft, caused to revolve by a pulley. This crank shaft carries at one end a circular plate in which is a slot running in the direction of a radius of the circle. In this slot is a stud to which are loosely pivoted two connecting rods the lower ends of which are pivoted to arms or levers which are pivoted loosely on a shaft carrying a ratchet wheel. Two nails placed on the levers alternately engage this ratchet wheel as the wheel vibrates backwards and forwards. One end of the shaft ratchet wheel is secured to a bevel pinion, which gears into a wheel placed upon the end of the large cylinder. The wheel thus "revolved and brought to rest by means of the ratchet wheel for the purpose of preventing the hide or leather from

" being fed forward and out by the edge of the knife when at the end of its vibrations."

[Printed, &c. Drawings.]

A.D. 1865, December 23.—N° 3325.

NEWTON, WILLIAM EDWARD.—(*A communication from Henry Wurts.*)—"Improvements in the preparation of glue or gelatine, " so as to render it insoluble in water, and applicable by the " admixture of other substances to various purposes for which " common glue or gelatine cannot now be used." "This invention relates to a mode of treating or acting chemically on " common glue or gelatine, so that without being deprived of its " gelatinising power, it will become in the process of drying converted into a substance which is insoluble in water, so that by " the addition of various ingredients it may be converted into " a substance similar to bone or ivory." It will be divested of adhesiveness, and not change in damp atmospheres, and will retain its transparency, hardness, strength, toughness, lustre, and elasticity. The glue or gelatine in the form of a strong solution in water is heated with a strong solution of chromic acid, or of an alkaline bichromate, as bichromate of potash. The solution will appear of an amber yellow colour, and when allowed to cool and gelatinise, the jelly will be found to have undergone the alteration described. Before the bichromate of potash is added to the solution of gelatine it may be variously modified by the admixture of other substances. Weight may be given by adding heavy substances in powder. "Hardness may be increased by adding sand, " clay, emery, pounded glass, red oxide of iron (jewellers' 'rouge') " or tripoli; and to increase its strength and toughness, chopped " fibre may be added, either vegetable, animal, or mineral, such " as cotton, hair, spun glass, asbestos."

Resinous and oily substances may be intimately combined with the modified gelatine in the form of alcoholic solutions, for the formation of products which are capable when dry of being wrought like ivory, bone, and horn. Castor oil and other oils soluble in alcohol, shellac, mastic, or the yellow resin of gamboge may be used for this purpose. The compounds are applicable to a variety of purposes.

[Printed, &c. No Drawings.]

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 " thus allowing a hide to be cut
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from the fur besides rendering the skin

, after being treated with alcohol, should

en up by rubbing." The treatment with

, alike to skins which have not undergone

cess and to those which have been raised or

the preparatory processes of tanning.

No Drawings.

A.D. 1866, January 10.—N^o 75.

TRA, and NIGHTINGALE, NOAH. — The "in-
 signed for the purpose of shaving or reducing
 the pelts to an even and regular thickness, and
 sing or producing a rough texture on the surface
 improvements consist in the application and use of

“ revolving spiral or curved knives or cutters secured around a shaft in the form of a roller, which during revolution are to act on the surface of the hide so as to reduce the thickness and roughness thereof. The slide [qy. hide] passes between a pair of rollers, and is submitted to the action of the cutters round one of these rollers, which acts as a bed to hold the hide up to the knives, and this roller, and the other roller, are made adjustable by screws, so that they may be regulated as the thickness of the hide, and the hide may be kept in contact with the pressure of the screws or springs. The hide has been reduced in thickness by this means and smoothed, and a roller covered with emery, pumice or a similar hard rough surface is to be substituted for the smoothing roller, or a metallic roller having a ‘file cut’ may be substituted, and the hides being again passed through the machine receive the roughness or ‘nap’ required by the action of the roughened rollers. In passing round the second roller the hide is kept in contact therewith by means of guides pressing upon it, and the hide is conveyed away from the roller and knife and grinders, after cutting and grinding, by means of an endless apron or band beneath, on to which it falls.” It is stated that “rollers of stiff bristles, like revolving brushes, may be used for the lower and guide rollers instead of solid rollers.”

[Printed, 10d. Drawing.]

A.D. 1866, January 24.—N° 233.

TURNERY, EDWARD, and TURNERY, JOHN.—“Improvements in preparing and treating hides and skins in the manufacture of leather.” The invention consists in a method of treating hides and skins preparatory to “cobbling and fleshing,” by which the time necessary for this preparatory process is much reduced. The patentees say:—“We first place in a vessel lime and water, or other liquid, or semifluid agent ordinarily used in unhairing skins and hides or in preparing them for fleshing. This vessel may be of any required shape and size. In this vessel we employ a wheel which is mounted so as to be capable of revolving, and is provided with paddles, pallets, or dashboards, which, as the wheel revolves, work or pass through the liquid

"or agent contained in the vessel. The wheel may be of any desired circumference." The hides are placed in the vessel and rotary motion is given to the wheel, which causes the liquor in the vessel to act rapidly on the hides and skins.

[Printed, 4d. No Drawings.]

A.D. 1866, January 27.—N° 272.

BROWN, JOHN HARCOURT.—"Improvements in the manufacture of leather fabrics." This invention consists in the employment of fine filaments of skins which by a strong adhesive preparation are made to adhere to a suitable fabric, and are reduced to an even surface by pressure and dressed in the ordinary way. Skins or parts of skins of calves, sheep, goats, kids, or other suitable skins are used, those being preferred which have been tanned by means of sumac, alum, and salt. Any woven reticulated, or felted fabric may be used as the base, but the one preferred is hard spun fine cotton cloth. To this is applied an adhesive composition in the manner employed in the manufacture of American leather cloth. The filaments are then spread as required over the composition. The fabric is passed between a pair of smooth highly polished rollers with a light pressure, and when sufficiently dried in a hot air room the superfluous filaments are brushed off and more if necessary added. The surface thus obtained may be dressed by the same process as Morocco, Russia, kid, roan and similar skins, or the varnish known as "leather finish" may be applied with a brush. The fabric may then be grained, embossed, or enamelled. In producing coverings for floors a woollen, felt, or thick linen or cotton cloth is used as the base, and filaments of leather are applied to it either alone, or mixed with fibrous materials such as woollen-flock or cotton waste.

[Printed, 4d. No Drawings.]

A.D. 1866, February 5.—N° 351.

MAHIEUX, AMÉDÉE.—(*A communication from Jean Carton.*)—"A machine for cutting, stamping, and embossing paper, cardboard, leather, india-rubber, and woven fabrics in general."

The machine "is intended to execute mechanically and in a self-acting way all kinds of work relating to the embossing, cutting, and stamping of the said material which has hitherto been effected manually by means of leaden hammers or mallets."

. The machine consists of an iron or wooden general frame and an upper frame supported on pillars. The upper frame can be raised or lowered at pleasure. The driving shaft revolves in bearings fixed to the upper frame. The engraved die is placed on a circular plate on the lower frame, and to this plate the required speed and motion is communicated by ordinary means. The plate can be raised or lowered by means of two cams fixed on the same shaft. Motion is communicated to the mallets or hammers by means of a bevel wheel on the main shaft gearing into another bevel wheel on a vertical shaft on which is mounted a cam. The rods supporting the mallets are fitted so as to slide vertically by the action of the cam. India-rubber buffers "are placed in the slides for producing the recoil required for regulating the force of the blows dealt by the mallets," and oiled springs are used to increase the force of the impact of the hammer. Metallic rollers, which receive a rotary motion, assist the cutting operation by pressing directly on the block or engraved plate. An india-rubber roller does the goffering or embossing part by pressing on the block, while conical rotating brushes "remove the bits of stuff cut out by the above operations." The patentee's claim is for the machine above described, "or their equivalents," for cutting, stamping, &c., "which operations have hitherto been accomplished by manual labour and contrivances."

[Printed, 1s. 10d. Drawings.]

A.D. 1866, February 16.—N° 493.

GEDDIE, WILLIAM EDWARD.—(*A communication from Adolphe Bel.*) (*Provisional protection only.*)—"The invention consists in a method of reducing the thickness of calf skins at the head where they are thicker than elsewhere. The apparatus used consists of
 " a case or chest serving as foot or base to a cast-iron column
 " fixed upon it, the said column itself supporting a plate or tablet
 " also of cast iron, which comes between two arms furnished with
 " bands of polished steel, on which a knife is made to slide.
 " The head of the calf skin is placed on the tablet, and as it is
 " not on the same level as the arms, by causing the knife to slide
 " on these latter the whole of that part of the skin which comes
 " above such level is removed. The level of the tablet is varied
 " by raising or lowering it, which is effected by means of its

“ support and a bolt passing into a slide bar, with which this latter is furnished. The operation in question takes place directly after that known as river work, and a workman can prepare from 80 to a hundred skins per hour.

“ It will be evident that although calf skins only are above mentioned, this invention may be used to reduce the thickness of parts of other skins or hides.”

[Printed, 4d. No Drawings.]

A.D. 1866, February 22.—N° 550.

DE CAESARIS, CLEMENTE.—“ Improvements in preparing hides and skins for tanning.” The patentee says:—“ My invention consists in causing hides and skins, after they have been unhaired in the usual manner by lime, and immediately before subjecting them to the action of the tanning liquor, to be immersed in a solution of a salt of ammonia for some hours. I find that the oxalate of ammonia is the salt of ammonia most suitable for the purpose. I employ the solution of the salt of ammonia of a strength such as results from dissolving about one of pound the salt of ammonia in twenty gallons of water; the hides or skins are to be immersed in the solution for about twenty-four hours; the process of tanning is then conducted in the ordinary manner, but it is found to occupy less time.”

[Printed, 4d. No Drawings.]

A.D. 1866, February 28.—N° 617.

NEWTON, WILLIAM EDWARD.—(*A communication from Samuel White Pingree.*)—(*Provisional protection only.*)—This invention “ is principally based on the use of steam in making extracts from tan bark and other vegetable materials, and it consists in treating ground tan bark or other material, first, with a weak extract or with water, whereby the material is swelled, and, after the first liquor has been drained off, treating it with steam, which penetrates the bark or other material and prepares it for a second percolation with cold water or weak tan liquor or other extract, and a second treatment with steam, so that by the application of the first washing the bark or other material is prepared for the action of steam, whereby the soluble parts contained in the bark are softened and brought in the best condition to give up their tannin or other substance to be extracted to the second washing of cold water or weak tan liquor or other

“ extract. The apparatus consists of a wooden or other vessel
“ of sufficient strength to sustain considerable pressure and
“ provided with a tightly fitting cover. This vessel may be
“ divided by transverse partitions into a series of compartments.
“ A steam pipe connected with a boiler or the exhaust of a steam
“ engine extends over the entire length of the vessel, and branch
“ pipes lead therefrom down into the several compartments of
“ the vessel. The bark or other material to be extracted rests
“ on slotted or perforated false bottoms, and the branch pipes
“ lead into boxes situated close to the perforated bottoms of the
“ several compartments of the vessel. These boxes are employed
“ to facilitate the introduction of exhaust steam, which in
“ passing into them is free to expand. The sides of the boxes
“ are perforated with a large number of holes, through which
“ the steam passes out to the material to be extracted. As
“ the steam passes through the branch pipes into the boxes it
“ expands, and a partial condensation takes place both within
“ the boxes and outside of the same, and by this partial condensation combined with the rapid expansion of the steam as it
“ reaches the boxes all back pressure on the piston of the engine
“ is avoided. If the steam be taken directly from a steam
“ generator, the boxes can be dispensed with, although they
“ serve in all cases to disseminate the steam evenly through the
“ material to be extracted. The tan bark or other material to be
“ extracted, which may first be ground, is placed in a tub and
“ steeped in water or weak liquor for three to six hours. By
“ the action of the liquid the bark or other material is softened
“ and swelled, and a portion of its strength is extracted. The
“ liquor thus obtained is drained off, and steam is admitted into
“ one or more of the compartments. After the bark has been
“ thoroughly heated by the action of the steam the vessel is again
“ filled with cold water and the tan bark allowed to steep for 30
“ minutes, and then it is heated a second time and again washed
“ with cold water or weak liquor. After draining off the last
“ liquor the bark may be again heated and washed until all the
“ strength is taken out.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 1.—N° 620.

HENTON, SAMUEL, and HENTON, CHARLES JOHN.—
(*Provisional protection only.*)—“Improvements in rotary brushes,

" and apparatus for brushing, currying, or dressing the skin or hair of animals or hides."

" Our invention consists in improved construction of the brush or currycomb, or combination of the two, which may be used to brush, curry, or dress the skins, hair, or hides of animals by rotary motion. For this purpose we construct the cylinder or endless band of the brush with a series of hard or soft bristles or hairs, and bars or combs of metal or hard substance combined in alternate lines either parallel with or set at an angle to the axis of rotation and arranged in proportions suitable to the nature of the skin, hair, or hide to be operated upon."

[Printed, 4d. No Drawings.]

A.D. 1866, March 21.—N^o 837.

ROZIÈRE, CHARLES.—" Certain improved agents suitable for cleaning and such like purposes." This invention relates to the production of agents suitable for cleaning, especially for cleaning or removing stains from textile or other fabrics, hides, and skins. It " consists in preparing a solid or liquid product from extracts obtained from the bark of quillaja wood or quillaja saponaria, by boiling the same in water. The said extract is mixed with salts of soda or other alkaline salts when a dry, and with alcohol when a liquid product is desired."

The bark is boiled in water and reduced to a soapy consistency. Sulphate of soda, reduced to a very efflorescent powder and dried in the open air, is then thrown in, a little at a time, till a quantity of sulphate equal to that of the extract has been used. The sulphate absorbs the water and the mixture acquires consistency. The soap is then pressed in moulds and wrapped in metal wrappers. When the soap is intended for cleaning cotton, hempen or linen fabrics, subcarbonate of soda mixed or not with carbonate of lime or dried clay may be substituted for the sulphate of soda, or carbonate of lime or dried clay may be used separately or together. When an essence is to be made the extract of bark is mixed with 5 per cent. of alcohol or acetic acid, and the sulphate of soda added afterwards.

[Printed, 4d. No Drawings.]

A.D. 1866, March 31.—N^o 921.

DAVIS, JAMES.—" An improved method of preventing the putrefactive decomposition of vegetable and animal substances, and utilizing the same for agricultural purposes." The prin-

ciple of this invention consists in the employment of chlorine or the savour of salt in any of its known forms, muriatic or hydrochloric acid being preferred, for the preservation of organic substances.

Skins of animals intended to be tanned, dressed, or manufactured into fur, may be preserved by immersing them in water containing 5 per cent. of the savour.

[Printed, *ad.* No Drawings.]

A.D. 1866, March 31.—N° 926.

HUGHES, EDWARD THOMAS.—(*A communication from Amsi Hansen van Gieson.*)—"Improvements in leather splitting machines." The patentee says:—"I prepare the leather for splitting before it reaches the knife, relying on tension instead of pressure to reduce the side of the leather from which the cut is to be taken to a perfect or nearly perfect plane. When it is desired to cut from the skin the thick and projecting portions on the flesh side, leaving the remainder of even thickness, I am enabled to do so very perfectly by a proper arrangement of the parts of my machine. After these unequal portions have been removed from the flesh side, sheets or pieces of even thickness may be cut from either side of the skin at will.

The knife is held by a strong backing or carriage sliding to and fro on a way or bearing, and driven by a screw passing underneath. One end of this screw is extended in the form of a shaft, on which is a pulley driven by a straight and cross belt alternately, so as to cause the screw to revolve in opposite directions alternately, each band being alternately slipped from the pulley to one of two loose pulleys placed on each side of it. The same shaft, by means of a train of gearing, gives motion to the rollers drawing the leather through the machine. When the motion of the shaft is reversed by changing the belts one of the pinions in the chain of gearing is, by means of a pivoted hanger, thrown out of gear with the pinion placed on the shaft, and another pinion, previously receiving motion from the pinion thrown out of gear, is put in gear with the pinion on the shaft, so that the rollers drawing the leather continue to revolve in the same direction as before. The pivoted hanger is moved by a slotted lever moved by a weighted bar, moved by dogs on the carriage. Two adjustable grinding wheels driven by pulleys sharpen the knife. The leather to be split is held up against a gauge above by the ends

of weighted levers, which are capable of yielding so as to allow the thicker portions of the leather to pass through. A table receives "the leather previous to its being operated upon," and also "assists in flattening it out by means of" "corrugations or ridges." The leather is drawn to the knife over one guage and under another, when the grain is to be cut off. When the inequalities on the flesh side are to be cut off, instead of the upper guage another guage is used, made in sections, to the upper ends of which levers are attached, held down by spring hooks. By means of these levers the guage can be made wider or narrower at the will of the operator.

Three rollers are used for drawing the leather through the machine. The leather passes first between two of these which are connected by matched gearing, so that their surfaces move at equal speed, and then between the lower of these rollers which is covered at the surface with india-rubber and a third roller made in sections.

[Printed, 2s. Drawings.]

A.D. 1866, April 5.—N^o 979.

INGHAM, WILLIAM.—(*Provisional protection only.*)—"Improvements in apparatus for fleshing and shaving hides and skins of animals in the raw, tanned, or dressed state." The invention consists in mounting a cylinder or roller upon a shaft which has motion given to it from a driving pulley. Upon this cylinder or roller cutting blades or knives are spirally fixed. Immediately above these knives is an adjustable guide or pressing roller, between which and the knives mounted upon the cylinder or roller the hides or skins to be operated upon are drawn, either by ordinary drawing rollers or other suitable means. As the substance passes through the machine it is fleshed or shaved by the cutting blades or knives, and by means of adjusting screws upon the upper roller any required amount of fleshing or shaving may be cut."

[Printed, 4d. No Drawings.]

A.D. 1866, April 13.—N^o 1046.

MACRUM, JAMES MARIUS.—(*A communication from James Macrum, of Boston.*)—(*Provisional protection only.*)—"Improvements in apparatus and processes for tanning." "The hides or skins to be tanned are in the first place subjected to a suc-

"cession of immersions in tan liquid alternating with brief
 "intervals of exposure in a vacuum or partial vacuum. This
 "first part of the process is carried out by having the skins laid
 "on a rack or racks, or stretched on frames secured in a proper
 "position in an air-tight revolving vat or vessel of cylindrical
 "shape, mounted so as to have its axis in a horizontal line."
 "Tan liquor is then admitted into the vessel, the apertures are
 "closed, and the air is exhausted "so as to make as perfect a
 "vacuum as possible above the tan liquid in the revolving vat."
 "The vat is then caused to revolve "till it appears that the skins
 "have absorbed as much as they will do in the stage of the
 "process" the vat being stopped at intervals, in order, by means of
 "the air-pump, "to make the vacuum more perfect, and to change
 "the tan liquid which should also be of increased strength at
 "each change. The duration and relative proportions of the
 "immersions and of the intervals of exposure in the vacuum are
 "regulated either by the greater or less quantity of tan liquid
 "admitted into the revolving vessel, or by providing by suitable
 "gearing for a slower motion from the point of immersion to
 "the point of emersion, and for a more rapid motion while the
 "skins are passing through the vacuum, for it is generally
 "desirable to have the skins immersed in the tan liquid for
 "longer intervals than they are kept in vacuum." The vessel
 "must be provided with the necessary apertures, and "if con-
 "sidered more convenient the revolving vessel may be supplied
 "with tan liquid through apertures in the axis arms thereof
 "connected by means of air-tight coupling boxes with pipes
 "communicating with the fixed vats.

"The second part of the process consists in subjecting the
 "skins which have been thus treated to a strong hydrostatic
 "pressure either in the revolving vat or in another suitable
 "vessel provided with apparatus for applying such pressure; to
 "this end the vessel employed must be completely filled with
 "strong tan liquid, and the hydrostatic pressure should be
 "gradually increased from time to time, till the process of tanning
 "is completed."

[Printed, ed. No Drawing.]

A.D. 1866, May 4.—N^o 1271.

DE CARMARIS, CLEMENTE.—(*Provisional protection only*).—
 "Improvements in preparing hides and skins for tanning."

The inventor says :—"After the hair is removed from the hides or skins by any of the known means, I then proceed to wash them so as to remove all traces of lime, and then immerse the hides in a vessel containing from fifteen to twenty gallons, more or less, of water according to the quantity of the hides, and mix with the water from one-half to three-quarters of a pound of either sulphate, muriate, or acetate of ammonia, or other ingredients possessing similar chemical properties thereto, and leave the hides therein for the space of from six to twenty-four hours, or until the hides are perfectly saturated. I then subject them to the usual well known processes of tanning."

[Printed, 4d. No Drawings.]

A.D. 1866, May 31.—N^o 1518.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Moses Webster Page.*)—"Improvements in tanning hides and skins, and in currying leather." The hides, &c. are "limed" in weak and strong solutions, unhaired, "drenched" in hen manure or other suitable preparation, and immersed and handled in coloring liquors made from "equal parts of any suitable bark and 'sweet fern,' 'cutch' and 'sweet fern,' or 'gambir' and 'sweet fern.'" A mixture is then prepared of the following ingredients :—"40 parts or pounds of common salt (chloride of sodium), or an equivalent of chloride of potassium, ammonium, or other chloride soluble in water; 40 parts or pounds of alum, (either potash soda, or ammonia, alum or sulphate of alumina) or an equivalent of a soluble aluminous salt, and 13 $\frac{33}{100}$ parts or pounds of saltpetre, or an equivalent of soda, or ammonia, saltpetre, or soluble nitrate of the earths. These are thoroughly mixed and the mixture is dissolved in four vats half filled with water. The vats measure six feet by four and are numbered 1, 2, 3, 4; one-third more of the mixture is put in 3 and 4 than is put in 1 and 2. After a "salt solution" has been thus prepared a "tin solution" is prepared as follows :—To two gallons of the stronger salt solution are added 2 quarts of oil of vitriol, 2 gallons of muriate of tin, of 140° to 150° strength, or an equivalent of crystals of tin or any protoxide of tin, 2 gallons of muriatic acid of 20° strength and 2 gallons of nitric acid of 36° or 40° strength. This is stated to be the best way of forming leather instead of muriatic acid, nitric acid, and

muriate of tin, " 6 gallons of oximuriate of tin 120° T. strength, " or 8 gallons of a hot solution of pink salt (double chloride of " tin and ammonium) " may be used. The hides are tanned by being immersed in the four vats successively, one pint of the tin solution being first added to the solutions in vats 3 and 4, and one pint being added to each of these solutions whenever a fresh lot of hides is put in. The coloring liquor first described, may, if desired, be made without sweet fern, or exclusively from sweet fern. The tanning occupies a very short time and the leather produced is stated to be exceedingly tough and close in fibre. For currying the patentee buffs or shaves the leather chiefly on the grain side instead of the flesh side, taking off a good deal from the grain side so as to bring the leather nearly to a uniform thickness, and levelling or shaving, but very little on the flesh side. The leather should not be allowed to dry before stuffing. The stuffing used is composed as follows:—" 8 lbs. of tallow, 8 qts. of cooked cod " liver oil (rejected medicinal oil), 8 qts. refined ' petroleum,' such " as is used by curriers, 4 qts. neatsfoot oil mixed and applied as " usual." Wax leather and calf-skins which have thus been treated are blacked on the flesh side with soap blacking and are afterwards treated with cooked cod liver oil. Leather for harness is blacked in the ordinary way.

[Printed, &c. No Drawings.]

A.D. 1866, June 27.—N° 1707.

MEDLOCK, HENRY, and BAILEY, WILLIAM.—" Improve- " ments in preserving animal substances." The preservation of hides under this invention is effected in the following way. A solution is made by dissolving the ordinary commercial gelatine in boiling water, using from one to two parts of gelatine in ten parts of water, and adding to this ten parts of " a solution of " bisulphite of lime (usually expressed by the formula Ca O , " 2 H O_2 .) in water of about the specific gravity of 1060." The hides are cleansed. The solution while still warm and liquid is used to coat the interior surface of the hides, and such interior coating, and also the hides themselves must be dry before they are packed. The hides can then be packed in casks or other suitable vessels, but if they are to be used within a short period, say two months after the application of the solution, no packing is necessary.

[Printed, &c. No Drawings.]

A.D. 1866, June 30.—N° 1746.

GILLOT, TOUSSAINT FRANÇOIS.—(*Provisional protection only.*)
—“Improvements in the manufacture of leather.” This invention proposes to utilize the parings or slivers of hides by tanning them, and cementing them together, and by hydraulic pressure making them into a solid waterproof sheet capable of being manufactured into boots, shoes, &c. The cement to be used for this purpose is made “of litharge, linseed oil, rosin, balm, wax, flour of sulphur, or solid sulphur gum, and especially gum lac. The linseed oil is heated to the boiling point and these substances are added.” Collodion with india-rubber or gutta percha, or india-rubber or gutta alone may also be used for the same purpose.

[Printed, 4d. No Drawings.]

A.D. 1866, July 23.—N° 1915.

MOUNTFORD, GEORGE, and LOVERSIDGE, GEORGE LOMAS.
—“Improvements in the tanning of hides and skins.” The invention consists in tanning by the use of valonia and American pearl ashes and oak bark. For ordinary hides and skins four baths are used. The first is composed of “a solution or extract of valonia marking about one degree on the Twaddell’s hydrometer,” and American pearl ashes in the proportion of about 4 pounds of ashes to 160 gallons of solution. In this bath the hides, &c. remain about three days. The second bath is composed of extract of three degrees and of ashes in the proportion of five pounds to 150 gallons. The hides remain four days. The third bath is composed of extract of seven degrees and of ashes in the proportion of 5½ pounds to 150 gallons. The hides remain seven days. The fourth or final bath is composed of extract of nine degrees and ashes in the proportion of 2½ pounds to 150 gallons. “Between each hide or skin as they are placed in the bath, about six pounds of oak bark or valonia are scattered or strewn.” The hides remain 14 days. For very thick hides the first two baths are the same as for ordinary hides. They are then [apparently] in some cases placed in a bath composed of valonia of nine degrees and ashes in the proportion of 2½ pounds to 150 gallons where they remain nine days. They are then placed in a final bath similar to that used for other hides; they remain 14 days. In-
d of valonia, oak bark or other equivalent tanning material

may be used. The constituents forming American pearl ashes may be employed. The hides are handled in all but the last bath.

[Printed, *ad.* No Drawings.]

A.D. 1866, August 14.—N° 2084.

BAXTER, CHARLES FRANCIS.—(*Provisional protection only.*)—

"Improvements in waterproofing textile fabrics, and in preserving leather, cork, wood, and vulcanized india-rubber, also terra-cotta, stucco, brick, and like substances." This invention consists in the use of paraffin for waterproofing purposes. The leather is either immersed or otherwise impregnated with paraffin by which means it becomes more durable and is preserved from cracking and from mould, and is also made waterproof.

[Printed, *ad.* No Drawings.]

A.D. 1866, September 10.—N° 2125.

FITZHENRY, EDWARD.—"A new and useful machine which may be employed for scouring, sleeking, or setting hides or leather." A flat tablet is used resting on a series of rails radiating from a centre, on which rails, by means of handles, the tablet can be moved about horizontally. Over the tablet is a carriage "which is supported between and by and hangs downward from two parallel and horizontal rails" supported from above. On these rails the carriage slides. Two sets of brushes (three in each set) are placed at each end of the carriage, the brushes being attached to the springs which extend from carriers that project from supports which turn freely on or on rods or bolts placed at each end of the carriage. Setting stones are fitted to these carriers. Arms carrying sleekers project from the same supports. Each of the carriers is connected by means of a rod hinged to the carrier with the shorter arm of a series of bent levers placed over the brushes and carriers, the longer arm ending in a handle. A rocker plate is supported by and turns on a bolt and in the centre of the carriage. The rods which connect the carriers, &c, with the bent levers pass through slots or holes in the rocker plate; there are nuts on these rods just over the rocker plate, so that as each end of the rocker plate is lifted the carriers, &c, are lifted. There are springs working freely on a central bolt, each spring extending to the carrier on each side, so that when one set of carriers is elevated the springs press down the opposite set of car-

riers. A connecting rod is fastened to one end of the rocker plate; the other end of this connecting rod is jointed to a crank arm by means of a pin which can be adjusted as required by a set nut or other means in a slot in the crank arm. When it is desired to scour and set, or scour, set, and sleek leather the crank is put in revolution, and by means of the connecting rod a reciprocating rectilinear motion over the leather is given to the carriage during each movement of the carriage one end of the rocker plate is pressed down and the other tilted up, so that each set of brushes, &c. "will be alternately brought down upon the leather and "moved along and upon it," water or other suitable scouring liquid being thrown upon the leather during the operation. By means of the handles of the bent levers any one of the brushes, &c. can be prevented from acting on the leather.

[Printed, 1s. 4d. Drawings.]

A.D. 1866, September 22.—N° 2443.

JOHNSON, JOHN ROBERT, and GALE, FREDERICK.—(*Provisional protection only.*)—"Improvements in waterproofing "leather, canvas, and other fabrics." This invention consists in impregnating leather &c., with certain new compounds for the purpose of making it waterproof. The compounds "are obtained "by mixing resinous substances, of which good yellow resin or "colophony may be taken as the type, with the crystalline fatty "acid, such as stearic acid or with spermaceti, or paraffin, or "vegetable wax." The proportion of resin to the other ingredients will depend upon the degree of flexibility required in the leather or fabric, and the use to which the leather or fabric is to be applied.

[Printed, 4d. No Drawings.]

A.D. 1866, November 20.—N° 3042.

ABEL, CHARLES DENTON.—(*A communication from Laurent Bréal.*)—"Improvements in drying tan, and in the machinery or apparatus employed for that purpose." This invention consists in extracting the liquor from tan as it is taken from the ~~its~~ it to pressure between two, three, or four so arranged as to yield a gradually increasing tan is thrown into a hopper and descends to two cylinders having helical grooves, the which forces the tan into the space between

them. The upper cylinder "runs in bearings capable of moving "up and down in slots in the framing, and is pressed down by "means of weighted levers upon the lower roller, which runs in "fixed bearings." The tan has some of its liquor extracted in passing between these cylinders. From between them it passes on to a perforated plate, through which the extracted liquor runs into the reservoir, and, leaving the lower cylinder, is fed forward by the helical grooves on the upper cylinder till it passes between the upper cylinder and another lower one. "By the pressure "exerted by these the whole of the liquor is extracted from the "tan, which consequently falls from between the cylinder in "front perfectly dry." The liquor passes away through the perforated plate. The first lower cylinder is cleaned by a revolving brush. A scraper removes the tan that may adhere to the other lower cylinder. The same machine, with few modifications, is constructed with three or four cylinders. In place of the perforated plate a perforated endless travelling apron may be used.

(Printed, ed. Drawing.)

A.D. 1866, November 26,—N° 3114.

CLARK, WILLIAM. (*A communication from Jean François Piedallu.*)—"Improvements in the manufacture or preparation of "leather and other materials. The invention consists:—

1st, in a currying process and a mode of preserving leather; 2ndly, in improved compositions for rendering leather impervious; 3rdly, in rendering fabrics, paper, and paste board, impervious by the same process as that used for leather.

Two compositions are described. The first consists of a paste made of:—"Yellow or white wax, 2 parts; mutton suet or oil "of the same, 1 part; neatfoot oil, 1 part; benzine, or tar "schist, or petroleum oils, 1 part." This composition is prepared by melting the wax and then adding the oils. When the composition is to be applied, the leather is to be dried at a temperature of 80° to 90° Fahrenheit. When all the moisture is expelled the composition is melted and applied to the leather with a brush, after which the leather is heated to cause the composition to penetrate, the operation being repeated until the leather is completely soaked.

As to the second composition the patentee says:—"Instead of "white or yellow wax, I may for the sake of economy use "Burgundy pitch, colophony, or other suitable resin, employing

"any suitable carburet of hydrogen or other solvent as a vehicle for applying the said composition. Thus I obtain excellent results with all kinds of leather, by applying the following compositions:—Burgundy pitch, colophony, or resin, 1 part; white or yellow wax, 1 part; mutton suet or beef fat, 2 parts; siccativ animal oil, 1 part; benzine, coal schist, or light petroleum oil, 6 parts." This composition is prepared in the same way as the foregoing one. "The object of the hydrocarburet in the composition is to dissolve its component parts and so serve as a vehicle for their introduction into the pores of the leather, while it is freed therefrom immediately afterwards by evaporation." "By increasing or diminishing the proportions of the solvent the introduction of the composition into the leather is more or less facilitated." Leather may be treated at a low temperature by steeping it several times in the composition, and leaving a sufficient interval between each steeping for the evaporation of the hydrocarburet."

[Printed, 4d. No Drawings.]

A.D. 1866, December 15.—N° 3303.

SWAN, JOSEPH WILSON. — "Improvements in the treatment of gelatinous tissues of gelatine and gum, and of compounds containing such substances." This "invention consists in the use of the salts of the sesquioxide of chromium, as, for example, sulphate of the sesquioxide of chromium or the substance known in commerce as chrome alum, as a means of rendering gelatine or gum (Senegal or Arabic) or compounds containing those substances insoluble in water." In tanning the hides or skins are immersed in a "solution containing about 1 per cent. of chrome alum, or in a solution of chromate or bichromate of potash or other suitable chromate or bichromate." The chromate or bichromate is decomposed in the skin or hide by means of oxalic or other suitable acid, so as to produce by the decomposition and reduction of the chromate or bichromate the required compound of chromic oxide.

[Printed, 4d. No Drawings.]

APPENDIX.

A.D. 1825, December 9.—N^o 5309.

DYER, JOSEPH CHENESEBOROUGH.—The invention claimed in this Specification, so far as it relates to leather, consists in certain improvements on a machine for shaving and preparing leather used in making wire cards for carding wool, &c. The patentee states that he uses the word "improvement" because a portion of the machinery described in the Specification of a Patent formerly granted to him, bearing date 26th March, 1811, No. 3430, is somewhat analogous in principle to his present improved machine. But, he goes on to say, "by comparing the following description of my improved machine with the one referred to in said former Specification, the entire novelty in the construction and method of using the present machine, and in its adaptation to the purpose of preparing leather for cards, will be clearly seen and admitted; wherefore I do claim the exclusive use of my improved machine for shaving leather for cards."

Across the machine extends a strong cast-iron jaw, the under surface of which is made straight and ground flat to afford a level bearing from end to end for the knife. The knife is held firmly in its place by this under jaw, which is moveable on an axis, and pressed up against the knife by an eccentric cross shaft turned by a winch, for opening or closing the jaw; set screws passing through the descending flange of the upper jaw afford an adjustable back support to the knife. "By this arrangement the knife may be removed and replaced in its situation at pleasure, with the certainty of always bringing its edge, when replaced, back to the same position as before it was removed. This point is of essential importance to facilitate the ready supply of sharp knives or cutters." The leather is fed up to the knife over a steel guage bar secured to arms moveable on a cross shaft "for the purpose of turning it out of the way of the knife when it requires to be taken out." Above the guage bar extends a

cast-iron swing frame moveable on pivots; and a steel cylinder serving for the top guage is fitted and ground into a circular bed in the bottom bar of the swing frame. By means of screws this cylindrical guage is adjusted "so as to bring the under surface of the cylinder with great accuracy to the required distance above the edge of the knife. This distance determines the thickness of the leather as it passes through the machine after being shaved. The drawing rollers are arranged so as to bite more or less upon the leather at pleasure. The process of shaving is performed as follows:—The swing guage is turned back, and the end of the leather is passed through between the drawing rollers. The swing guage is then returned down to bear against its end stops, which will press the leather down upon the face of the bottom bar guage. "The leather being drawn forward will meet the edge of the knife just as it passes from the pinch or pressing action of the guages; and as it presses in an ascending direction over the knife edge, a thickness of leather equal to the space between the knife edge and the top guage will be drawn forward, whilst any additional substance or inequalities of thickness will be cut or shaved off and passed down in shavings."

[Printed, *4s. 4d.* Drawings. See London Journal (*Newton's*), vol. 14, p. 245; Carpmac's Reports on Patent Cases, vol. 2, p. 430; L. J. (Ch.), vol. 8 (N. S.), p. 184; Webster's Patent Law, pp. 27, 28, and 106 (also p. 130, case 141).]

A.D. 1842, December 3.—N^o 9529.

MANSELL, THOMAS. — "Certain improved machinery for cutting or shaping leather, paper, linen, castings, silks, and other fabrics." The improved machinery for cutting leather, &c. consists of a press commonly called a "fly press." To the bolt of this press is affixed, by screws or otherwise, a hollow tool, the edge of which is sharp, and of a shape corresponding to the pieces of leather, &c. to be cut. On the bed of the press is fixed a plate of hardened steel. The leather to be cut is laid on the steel plate, and the tool being brought down upon it cuts it to the required shape.

The other invention claimed under this Specification is the improved machinery for shaping the fronts of Wellington and other boots. The frame of this machine consists of two uprights and a cross piece. A plate of strong sheet zinc of the form required extends across the machine, and can be racked up and

down by means of racks in the uprights attached to the ends of the plate. On being racked downwards, the plate passes between two frames which can be made to approach or recede from each other. The operation of the machine is as follows:—A piece of leather, cut of the proper shape for the front of a boot, is laid on the upper surfaces of the frames, the distance of the frames having been previously adjusted to suit the kind of leather employed. The zinc plate is then made “to descend between the frames, and carrying the leather with it stretches it so as to give it the proper form for a boot front.”

[Printed, & Drawing.]

A.D. 1853, December 31.—N° 3045.

SOREL, STANISLAS, TRANQUILE MODESTE. — “Certain improved compositions to be employed as substitutes for caoutchouc, gutta percha, and certain fatty bodies.”

“The principal bases of these compositions are the following substances:—Colophony or common resin, bitumen, or natural pitch, or the pitch obtained from gas works, fixed resin oils, gutta percha, hydrated lime, and water. The above substances are employed (by weight) in about the following proportions:—

“ Colophony	-	-	-	2
“ Pitch or bitumen	-	-	-	2
“ Resin oil	-	-	-	8
“ Hydrated lime	-	-	-	6
“ Gutta percha	-	-	-	12
“ Water	-	-	-	3
“ Pipeclay or other like argillaceous earths	-	-	-	10

43

The composition is prepared in a heated copper. Colophony, bitumen, and resin oil are first put in and stirred till the first two substances are dissolved. Slacked and broken hydrate of lime of the consistence of molasses is then added, and, when the matter is liquefied the gutta percha is put in. When the gutta percha is dissolved, argil is mixed up into the composition, which is then boiled, kneaded in water, and rolled. The materials “may be varied and replaced by other analogous substances producing the same result.”

The following composition may be used to prepare leather and render it "supple and impermeable :"—

Colophony	-	-	-	6
Resin oil	-	-	-	6
Tallow	-	-	-	2
Fish oil or non-siccative vegetable oil	-	-	-	2
Train oil	-	-	-	2
Palm oil	-	-	-	1
Water	-	-	-	2

 21

The following composition is used for rendering leather water-proof :—

Colophony	-	-	-	12
Fixed resin oil	-	-	-	4
Yellow bee's-wax	-	-	-	2
Tallow	-	-	-	2

 20

All the substances except the water are placed in a copper on the fire. The mixture is stirred till all the resin is melted. When the temperature has lowered to about thirty degrees Centigrade, the fire is withdrawn, and the mixture left to cool. "To render this last composition applicable to rendering leather waterproof, the agency of heat must be employed, either for warming both the composition and leather, or for warming one of the two."

[Printed, 4d. No Drawings.]

INDEX OF SUBJECT MATTER.

[The numbers refer to the pages in which the Abridgments commence.
 .. The names printed in *Italics* are those of the persons by whom the
 inventions have been communicated to the Applicants for Letters Patent.]

Artificial leather :

Hooper, 11.
 Newton (*Elmer*), 250.
 Bernard, 111.
 Hughes, 167.
 Leach (*Hendrycks*), 207.
 Butlin, 255.
 Anderson, 254.
 Turner, 257.
 Gillot, 310.

Bating :

Laycock, 113.
 Steart, 225.
 Johnson, 227.
 Dunseith, 227.
 Steart, 225.
 Birdsall, 243.

Black leather :

Fearne, 6.
 Gray, 6.
 Mollersten, 51.
 Stones, 108.
 Gregg, 207.
 Newton (*Elmer*), 250.

Blacking :

Nash, 9.
 Adams, 43.
 Radley, 103.
 Meyer, 103.
 Hamsher, 169.

Blue leather :

Fearne, 6.
 Gray, 6.
 Samuel, 7.

Cements for joining leather :

Deutsche, 81.
 De Clippéle, 177.
 Henry (*Messrs. Vassours et
 Houdigant*), 188.
 Gillot, 310.

Cleansing hides, &c. :

Weekes, 22.
 Martin, 27.
 Fanshawe, 76.
 Thirlon, 93.
 Perkes, 117.
 Corry, 122.
 Hossell, 123.
 Devos, 126.
 Cox, 133.
 De Chavanon, 164.
 Marscar, 182.
 Lister, 190.
 Warburton, 190.
 Johnson (*Knapp*), 222.
 Cox, 222.
 Sharp, 274.
 Rosiere, 304.
 Fitzhenry, 311.

Colouring :

Richardson, 29.
 Mollersten, 51.
 Nelson, 45.
 Cronier, 69.
 Whinery, 121.
 Lippman, 139.
 Lippman, 142.
 Walsh, 154.
 Brierly, 154.
 Cornides, 163.
 Brooman (*Bassett*), 222.

Combined fabrics of leather and other material :

Stevier, 58.
 Clarkson, 100.
 Pegg, 107.
 Bernard, 111.
 Whinery, 121.
 Wilson, 122.
 De Clippéle, 177.
 Wilkinson, 190.
 Wilson, 195.
 Lee, 275.
 Brown, 300.
 Gillot, 310.

Corrugated surfaces, producing
on leather :

Pegg, 107.

Curing and preserving skins
and hides :

Tanner, 45.
Hall, 69.
Burnett, Sir W., 71.
Warrington, 75.
Fenshawe, 76.
Warrington, 97.
Vernet, 101.
Preller, 114.
Lamaille, 116.
Perkes, 117.
Whiney, 131.
Theroulde, 141.
Tooth, 143.
Claus, 144.
Warriner, 163.
Cornides, 162.
Larnaudes, 172.
Bobouf, 175.
Davies, 180.
Henry (*Messrs. Vasseurs et
Houbigant*), 188.
Hans, 197.
Clark (*Margueritte*), 208.
Kemp, 214.
Stevens (*Lagase*), 224.
Batray, 227.
Clark (*Magneval*), 230.
De la Peyrouse, 247.
Moiroux, 251.
Newton (*Band*), 256.
Newton (*Laurean*), 258.
Newton (*Laurean*), 263.
Morgan, 268.
Clark (*Lies Bodart*), 271.
Stenhouse, 277.
Sourzac, 282.
Bombail, 292.
Miller, 292.
Towers, 298.
Medlock, 309.
Bayley, 309.
Barter, 311.

Curriers' knives :

Bartholomew, 174.

Currying :

Poole, 72.
Stones, 106.
Rochette, 173.
Bartholomew, 174.
Mercer, 196.
Gregg, 199.
Conyers, 246.
Davies (*Lightfoot*), 262.
Bonneville (*Dumas*), 293.
Henton, 303.
Clark (*Piedalla*), 313.

Cutting skins, &c. :

Dyer, 39.
Westhead, 60.
O'Byrne, 117.
Dowling, 117.
Houchin, 176.
Keller, 186.
Ashworth, 187.
Mossman, 200.
Mahieux (*Carton*), 300.
Mansell, 316 (*Appendix*).

Cutting hair off skins and
hides :

Watlington, 3.
Chapman, 20.
Willcox, 30.
Willcox, 37.
Dyer, 39.
Mallory, 40.
Dyer, 41.
Hart, 43.
Rainbridge, 48.
Slater, 49.
Baring, 50.
Bell, 54.
Walmaley, 55.
Plant, 56.
Oldfield, 178.
Taylor, 183.
Taylor, 194.
Nickols, 211.
Vero, 229.

Damasking :

Redrich, 3.
Jones, 8.
Newberry, 80.

Dies for ornamenting leather :

Bernard, 118.

Dissolving leather :

Wadsworth, 270.

Dressing skins and hides :

Howard, 1.
Tyzacke, 1.
Knowles, 20.
Gill, 48.
Jacquemart, 52.
Poole, 72.
Cox, 91.
Thirion, 93.
East, 105.
Tanner, 115.
Corry, 122.
Cornides, 162.
Gregg, 199.
Clark (*Boyer Vaucher*), 270.
Bonneville (*Dumas*), 293.
Henton, 303.

Drying leather and hides, apparatus for :

Davison, 80.
Mymington, 80.
Wilkins, 93.
Thirlon, 93.
Perkes, 117.
Johnson (*Messrs.* *Artus Brothers*), 130.

Drying tan :

Abel, 812.
Bréval, 812.

Dyeing skins and leather :

Green, 3.
Pearce, 6.
Gray, 6.
Samuel, 7.
Richardson, 20.
Nelson, 40.
Gill, 40.
Calvert, 108.
Warront, 125.
Pochin, 138.
Lippman, 139.
Lippman, 143.
Francis, 160.
Hooper, 160.
Lester, 190.
Warburton, 190.
Kason, 198.
Gryce, 207.
Mayer (*Nonnauachain*), 233.
Henry (*Aulier*), 278.
Labrousse, 281.
Kelly, 281.

Electric currents in tanning :

Crosse, 101.
Ward, 208.
Menard (*Kohn*), 231.
Menard (*Kohn*), 230.

Embossing leather, machinery for :

Hebert, 35.
Schroth, 67.
Whitehead, 103.
Clayton, 109.
Smith, 176.
Howchin, 176.
Doley, 190.
Higland, 190.
Worrall, 190.
Moseman, 209.
Leareh (*Hendrycke*), 207.
Mennons (*Debous, Deany*), 241.
Mahieux (*Corton*), 309.

—, tools for :

Schroth, 65.
Schroth, 67.
Gorill, 224.

2 K.

Embroidering leather:
Hunt, 1.

Enamelling leather :

Nowler, 87.
Whitman, 148.
Newton (*Gibson*), 204.

Extracting tanning matters :

Warden, 12.
Dennond, 15.
Murphy, 16.
Moline, 48.
Kendrick, 60.
Browin, 69.
Pearce, baron de, 66.
Pontifex, 66.
Maltby, 70.
Querton, 70.
Duncan, 98.
Lyke, 100.
Calvert, 108.
Varillat, 109.
Moride, 116.
Johnson (*Kich*), 124.
Doyon, 140.
Varillat, 154.
Nelson, 168.
Hourgeois, 177.
Jennings, 179.
Lees, 180.
Kason, 209.
Henry (*Obert, Vasseur, Hou-*
bigant), 214.
Duval, 230.
Beaudet, 239.
Henry (*Aulier*), 278.
Johnson (*Coba*), 290.

Extracting tanning liquor from spent materials :

Cant, 28.
Miller, 28.
Browin, 66.
Turnbull, 87.
Abel (*Bréval*), 812.

Feathers, methods of removing from skins :

Tinsaud, 234.
Tinsaud, 234.

Finishing leather :

Jefferson, Ellis, and Galloway,
84.
Harvey, 44.
Skinner, 139.

Fire-proof, making leather :

Bethel, 65.
Froggart, 113.
Henson, 191.
Henson, 191.
Wilson, 195.
Brooman (*Jacal*), 210.
Newton (*Gibson*), 204.

X

Fixing colour on leather :

Mathews, 2.
 Ferrers, 2.
 Meyer (*Sonnenschein*), 233.

Fleshing skins and hides :

Nossiter, 95.
 Cox, 153.
 Shaw, 206.
 Ingham, 306.

Frizing, machinery for :

Bull, 10.
 Ellen, 98.

Fulling stocks in dressing skins, &c. :

Thirlon, 93.
 Repelin, 213.
 Brooman (*Picard*), 271.

Gelatine, extracting from hides :

Dean, 74.
 Cox, 85.
 Cox, 85.

—, from leather :

Johnson (*Rich*), 134.

Gilding leather :

Thennemans, 2.
 Bull, 10.

—, tools for :

Gorrill, 224.

Glazing, machinery for :

Cederbarg, 18.
 Willcox, 32.
 Jefferson, 34.
 Ellis, 34.
 Galloway, 34.
 Luterean, 185.
 Capello, 258.
 Capello, 264.
 Turney, 282.
 Wood, 282.

Graining, machinery for :

Cederbarg, 18.
 Willcox, 32.
 Hebert, 35.
 Nossiter, 95.
 Bernard, 118.

Green leather :

Fearne, 6.
 Gray, 6.
 Samuel, 7.
 Brooman (*Basset*), 232.

Grinding bark, apparatus for :

Shepley, 8.
 Weekes, 22.
 Bagnall, 24.
 Ripley, 178.

Gutta percha, use of in water-proofing :

Ayckbourn, 120.
 Whinery, 121.
 Assanti, 128.
 Cornides, 139.
 De Clippéle, 177.
 Wright, 184.
 Newton (*La Forge, Merwin, Bray, Prask*), 216.
 Harton, 283.
 Abel, 288.

Hard grain on leather :

Clifton, 287.

Hardening glue and gelatine :

Newton (*Wurtz*), 287.
 Swan, 314.

Hardening leather :

Kemp, 278.

Japanning leather :

Newton, 129.
 Walsh, 154.
 Brierley, 154.
 Hoey, 262.

Joining skins, &c. :

Richardson, 20.
 Whinery, 121.

Lambskins prepared for surgical use :

Alison, 131.

Losh leather :

Moody, 43.
 Nisbett, 81.
 Ellen, 98.
 Pullman, 124.
 Eason, 206.

Marbling leather :

Redrich, 3.
 Jones, 3.
 Newbery, 80.

Marking and ruling leather, machinery for :

Bernard, 111.
 Johnson, 123.
 Eaton, 286.
 Turney, 282.
 Wood, 282.

Mineral substances, alone, for making leather :

Ashton, 18.
Bordier, 77.
Belford (*Molac, Friedel*), 137.
Lees, 189.
Jennings, 237.
Johnson (*Knapp*), 238.
Pfanhausen, 280.

— in combination with ordinary tanning materials :

Baillie (*Paulmier*), 205.

Morocco leather, preparation of :

Alison, 19.
Bernard, 118.
Beamish, 151.
Le Grand, 154.
Capello, 258.
Capello, 264.

Nap, raising on linings of sheepskins :

Shaw, 198.
Shaw, 206.

Ornamenting leather :

Bull, 10.
East, 105.
Bernard, 118.
Johnson, 123.
Wilson, 133.
Clayton, 169.
Doly, 190.
Bigland, 190.
Worrall, 190.
Coulon, 192.
Girand, 192.

Painting on leather :

Thennemans, 2.
Winter, 64.
Guigues, 89.
Calvert, 108.
Pochin, 138.
Mennons (*Debous, Denny*), 241.
Worrall, 261.

Paper made from leather :

Hooper, 11.

Paraffin, use of in waterproofing :

Stenhouse, 244.
Stenhouse, 245.
Stenhouse, 277.
Abel, 288.
Baxter, 311.

Parchment and vellum turned into leather :

Hitchcock, 23.

Paring :

Crowley, 8.
Bull, 10.
Newberry, 34.
Revere, 38.
Dyer, 315 (*Appendix*).
Bernard, 111.
Chouillou, 160.
Fell, 248.
Haines, 248.
Lee, 272.
Lee, 275.
Clifton, 287.
Gedge (*Bel*), 289.
Doly, 290.
Bigland, 190.
Worrall, 190.
Cluderay, 295.
Clunan, 298.
Nightingale, 298.
Gedge (*Bel*), 301.
Ingham, 306.

Percolation, tanning by :

Spilsbury, 47.
Drake, 54.
Chaplin, 61.
Cox, 62.
Cronier, 69.
Cox, 78.
Soupart, 240.

Plates of glass for embossing leather :

Doley, 190.
Bigland, 190.
Worrall, 190.

— metallic :

Mennons (*Debous, Denny*), 241.

Polishing leather, machinery for :

Cederberg, 18.
Hebert, 35.
Ripley, 181.
Vavasseur, 220.

Preparing skins and hides :

Howard, 1.
Knowles, 20.
Richardson, 29.
Mollersten, 31.
Gill, 48.
Jacquemart, 52.
Schroth, 64.
Webster, 72.
Dean, 74.
Wilson, 77.
Bordier, 79.
Nisbett, 81.
Nossiter, 87.

Preparing skins, &c.—*cont.*

Snyder, 94.
 Jonquet, 95.
 Harris, 100.
 Preller, 114.
 Perkes, 117.
 Whinery, 121.
 Garrett, 124.
 Taylor, 126.
 Sweeter (*Simonds*), 130.
 Claus, 144.
 Devos, 146.
 Whiting, 152.
 Preller, 153.
 Sterlingue, 161.
 Cornides, 162.
 Taylor, 183.
 Hands, 197.
 Shaw, 206.
 Clark (*Maria*), 212.
 Newton (*Lafkin*), 216.
 Holmes, 223.
 Jullien, 223.
 Steart, 233.
 Johnson (*Knapp*), 233.
 Soupart, 240.
 Birdsall, 242.
 Brooman (*Adler*), 266.
 Clark (*Maria*), 284.
 Bonneville (*Dumas*), 293.
 Towers, 293.
 Turney, 299.
 De Cæsaris, 302.
 De Cæsaris, 307.

Preparing tanning materials:

Hawkes, 15.
 Lawrence, 23.
 Ashmore, 44.
 Neilson, 45.
 Good, 46.
 Newman, 53.
 Patterson, 53.
 Brewin, 59.
 Suarez, Baron de, 66.
 Pontifex, 66.
 Turnbull, 87.
 Warrington, 97.
 Kennedy, 127.
 Jennings, 179.
 Henry (*Vasseur Houbigant*), 189.
 Welsford, 203.
 Eason, 209.
 Brooman (*Rocher*), 210.
 Coopman, 218.
 Duval, 239.
 Beaudet, 239.
 Pfanhausen, 230.
 Beaux, 234.
 Pannifex, 234.
 Henderson (*Beaux Pannifex*), 236.

Preserving leather:

Sylvanus, 2.

Preserving skins and hides. *See* Curing.

Preserving green hides:

Tanner, 45.
 Payras, 249.
 Newton (*Laureau*), 256.

Press for cutting out leather:

Mansell (*Appendix*), 316.
 Howchin, 176.

Pressed leather:

Butlin, 253.
 Anderton, 254.
 Turner, 257.
 Bugg, 273.
 Brown, 300.
 Gillot, 310.

Pressing spent liquor from hides:

Marchant, 5.
 Jones, 62.
 Herapath, 63.
 Cox, 63.
 Nossiter, 87.
 Kearsley, 90.
 Cox, 91.
 Garrett, 124.
 Skinner, 159.
 Lafone, 172.
 Cox, 252.
 Hamer, 260.

Pressure, tanning by:

Fletcher, 49.
 Poole, 67.
 Fanshawe, 76.
 Turnbull, 87.
 Duncan, 98.
 Sautelet, 149.
 Ruck, 155.
 Francis, 166.
 Hooper, 166.
 Lafone, 172.
 Clark (*Favier*), 191.
 Fryer, 193.
 Watt, 193.
 Holmes, 193.
 Eason, 209.
 Brooman (*Mouren*), 253.
 Hamer, 260.
 Smith (*Jullien*), 279.
 Newton (*Pingree*), 302.
 Macrum (*Johnston*), 306.

Printing on leather:

Thennemans, 2.
 Winter, 64.
 Guigues, 89.
 Calvert, 103.
 Pochin, 138.
 Mennons (*Debous, Denny*), 241.
 Worrall, 260.

INDEX OF SUBJECT MATTER.

327

ning, process of—*cont.*

Biddle (*Kendall*), 155.
 Boyd (*Kendall*), 155.
 Sterlingle, 161.
 Newton (*Knoderer*), 169.
 Lafone, 172.
 Clark (*Favier*), 191.
 Ward, 206.
 Eason, 209.
 Ménard (*Rehn*), 231.
 Ménard (*Rehn*), 236.
 Duval, 239.
 Beaudet, 239.
 Hamer, 260.
 Brooman (*Picard*), 271.
 Wilson, 273.
 Sharp, 274.
 Smith (*Jullien*), 279.
 Cox, 283.
 Henderson (*Beaux Pannifex*), 286.
 Macrum (*Johnston*), 306.

Tawing :

Howard, 1.
 Watts, 19.
 Neilson, 45.
 Pochin, 189.
 Johnson (*Knapp*), 238.

Teasing and cleansing hair and wool on skins :

Baird, 157.
 Newton, 180.
 Ronald, 268.
 Henton, 308.

Thickening leather :

Clark (*Favier*), 194.
 Jennings, 237.
 Henry (*Godoy, Bassano, Beaudet*), 235.

Transparent leather, production of :

Mennons, 195.

Unhairing skins and hides :

Chrysel, 4.
 Desmond, 15.
 Chapman, 20.
 Dean, 74.
 Warington, 75.
 Turnival, 75.
 Turnbull, 87.
 Nossiter, 87.
 Wilkins, 82.
 Warington, 97.
 Crosse, 101.
 Laycock, 113.
 Whinery, 121.
 Corry, 123.
 Lemaire, 128.
 Sweetser (*Simonds*), 130.

Unhairing skins, &c.—*cont.*

Squire, 140.
 Markindale, 140.
 Glans, 144.
 Devos, 144.
 Biddle (*Kendall*), 155.
 Boyd (*Kendall*), 155.
 Freller, 158.
 Sterlingle, 161.
 Caillaud, 172.
 Taylor, 183.
 Taylor, 194.
 Humphreys, 200.
 Newton (*Lu/kin*), 216.
 Johnson (*Dunsoeth*), 227.
 Vero, 239.
 Ménard (*Rehn*), 231.
 Tussand, 234.
 Clark (*Moris*), 234.
 Turney, 299.
 Ingham, 306.

Vacuum, tanning in a :

Knowlys, 50.
 Duesbury, 50.
 Francis, 106.
 Hooper, 166.
 Newton (*Knoderer*), 148.
 Newton (*Knoderer*), 169.
 Wright, 182.
 Lister, 190.
 Warburton, 190.
 Clark (*Favier*), 191.
 Eason, 209.
 Macrum (*Johnston*), 306.

Varnish :

Mills, 47.
 Fairman, 47.
 Jennings, 104.
 Newton, 129.
 Brooman (*Dollier frères*), 174.
 Stevens (*Bouet*), 218.
 Barnwell, 220.
 Rollason, 220.
 Stevens (*Chapa, Laçaze*), 234.
 Hoey, 262.

Vellum. See Parchment.

Waterproofing :

Wolken, 1.
 Sutton, 2.
 Sylvanus, 2.
 Peal, 12.
 Bellamy, 13.
 Hitchcock, 23.
 Walker, 26.
 Alphey, 26.
 Mollersten, 51.
 Mills, 47.
 Fairman, 47.
 Wetterstedt, 50.
 Hancock, 52.
 Edmunds, 57.

INDEX OF SUBJECT MATTER

g hides, &c.:
 (Boyer, Vaucher), 270.
 (Ducommun), 288.

apparatus for:

2, 24.
 rtin, 27.
 lsbury, 47.
 etcher, 49.
 nowlys, 50.
 nesbury, 51.
 rake, 54.
 Poole, 57.
 Cronier, 63.
 Fanshawe, 76.
 De Schelestadt, 77.
 Sterlingue, 77.
 Cox, 78.
 Nositer, 87.
 Squire, 89.
 Kearaley, 90.
 Cox, 91.
 Garrett, 124.
 Whiting, 152.
 Skinner, 159.
 Francis, 166.
 Hooper, 166.
 Lister, 190.
 Warburton, 190.
 Fryer, 193.
 Watt, 193.
 Holmes, 193.
 Eason, 198.
 Vasserot (Luce), 202.
 Repellin, 213.
 Holmes, 223.
 Cox, 232.
 Brooman (Mouren), 253.
 Bayley, 289.

Tanning, process of:

Howard, 1.
 Doughty, 2.
 Tysacko, 2.
 Legros, 2.
 Barry, 2.
 Mell, 2.
 Johnson, 6.
 Ashton, 13.
 Tucker, 14.
 Hawkes, 15.
 Lawrence, 23.
 Cant, 28.
 Millar, 28.
 Stanley, 33.
 Patten, 42.
 Hankinson, 42.
 Moody, 43.
 Moline, 43.
 Ashmore, 44.
 Nollson, 45.
 Good, 46.
 Kendrick, 46.
 Jacquemart, 53.
 Newman, 56.

Tanning, process of—cont.

Patterson, 56.
 Brewin, 59.
 Chaplin, 61.
 Cox, 78.
 Bordier, 79.
 Warrington, 87.
 Newton, 102.
 Laycock, 113.
 Magnant, 119.
 Whinery, 121.
 Serruys, 123.
 Kennedy, 127.
 Belford (Molac Friedel), 137.
 Funcke, 152.
 Ruck, 155.
 Pichon, 163.
 Kenyon, 175.
 Jennings, 179.
 Lees, 189.
 Welsford, 203.
 Baillie (Paumier), 205.
 Brooman (Rocher), 210.
 Newton (Robinson Eggleston), 217.
 Coopman, 218.
 Dietz, 221.
 Dietz, 222.
 Johnson (Dunseith), 227.
 Jennings, 237.
 Johnson (Knapp), 238.
 Bötet (Vaurymenant), 261.
 Henry (Autier), 278.
 Beaux, 284.
 Pannifex, 284.
 Johnson (Ces), 290.
 Harris, 294.
 Bousfield (Page), 306.
 Mountford, 310.
 Loversidge, 310.

Tanning, apparatus for and process of:

Marchant, 5.
 Fay, 11.
 Desmond, 15.
 Murphy, 16.
 Cross, 17.
 Brewin, 21.
 Lenx, 25.
 Brewin, 26.
 Cox, 62.
 Jones, 62.
 Herapath, 63.
 Cox, 63.
 Poole, 67.
 Cronier, 69.
 Warrington, 75.
 Turnbull, 87.
 Duncan, 98.
 Crosse, 101.
 Pyke, 106.
 Lemaire, 136.
 Devos, 146.
 Newton (Knoderer), 148.
 Sautetlet, 148.

Tanning

Rid
 Boy
 Ste
 Ne
 Lat
 Cla
 Wa
 Ea
 Mé
 Mé
 Du
 Be
 Ha
 Br
 Wi
 Sh
 Sm
 Co
 He
 M.

Tawing

H
 W
 N
 Pe
 Jo

Teasin
 woo

B
 N
 I

Thick

Tanning, process of—*cont.*

Riddle (*Kendall*), 155.
 Boyd (*Kendall*), 155.
 Sterlingue, 161.
 Newton (*Knoderer*), 169.
 Lafone, 179.
 Clark (*Favier*), 191.
 Ward, 206.
 Eason, 209.
 Ménard (*Ehn*), 231.
 Ménard (*Ehn*), 236.
 Duval, 239.
 Beaudet, 239.
 Hamer, 260.
 Brooman (*Picard*), 271.
 Wilson, 273.
 Sharp, 274.
 Smith (*Jullien*), 279.
 Cox, 283.
 Henderson (*Beaux Pannifex*), 286.
 Macrum (*Johnston*), 306.

Tawing :

Howard, 1.
 Watts, 19.
 Neilson, 45.
 Pochin, 183.
 Johnson (*Knapp*), 238.

Teasing and cleansing hair and wool on skins :

Baird, 157.
 Newton, 180.
 Ronald, 288.
 Henton, 303.

Thickening leather :

Clark (*Favier*), 194.
 Jennings, 237.
 Henry (*Godoy, Bassano, Beaudet*), 253.

Transparent leather, production of :

Mennons, 195.

Unhairing skins and hides :

Chrysel, 4.
 Desmond, 15.
 Chapman, 20.
 Dean, 74.
 Warrington, 75.
 Furnival, 75.
 Turnbull, 87.
 Noesiter, 87.
 Wilkins, 92.
 Warrington, 97.
 Croese, 101.
 Laycock, 113.
 Whinery, 121.
 Corry, 122.
 Lemaire, 128.
 Sweetser (*Simonds*), 130.

Unhairing skins, &c.—*cont.*

Squire, 140.
 Markindale, 140.
 Claus, 144.
 Devos, 148.
 Riddle (*Kendall*), 155.
 Boyd (*Kendall*), 155.
 Preller, 158.
 Sterlingue, 161.
 Caillaud, 172.
 Taylor, 183.
 Taylor, 184.
 Humphreys, 200.
 Newton (*Lufkin*), 216.
 Johnson (*Dunseth*), 227.
 Vero, 229.
 Ménard (*Ehn*), 231.
 Tusaud, 234.
 Clark (*Marts*), 284.
 Turney, 299.
 Ingham, 306.

Vacuum, tanning in a :

Knowlys, 50.
 Duesbury, 50.
 Francis, 103.
 Hooper, 166.
 Newton (*Knoderer*), 148.
 Newton (*Knoderer*), 169.
 Wright, 183.
 Lister, 190.
 Warburton, 190.
 Clark (*Favier*), 191.
 Eason, 209.
 Macrum (*Johnston*), 306.

Varnish :

Mills, 47.
 Fairman, 47.
 Jennings, 104.
 Newton, 139.
 Brooman (*Dollier frères*), 174.
 Stevens (*Bouet*), 218.
 Barnwell, 220.
 Rollason, 220.
 Stevens (*Chapa, Laçaze*), 234.
 Hoey, 262.

Vellum. See Parchment.

Waterproofing :

Wolfen, 1.
 Sutton, 2.
 Sylvanus, 2.
 Peal, 12.
 Bellamy, 13.
 Hitchcock, 23.
 Walker, 26.
 Alphey, 28.
 Mollersten, 31.
 Mills, 47.
 Fairman, 47.
 Wetterstedt, 50.
 Hancock, 53.
 Edmunds, 57.

Waterproofing—cont.

Stevier, 58.
 Raper, 64.
 Bethel, 65.
 Raper, 66.
 Raper, 68.
 Varicas, 68.
 Hall, 68.
 Varicas, 70.
 Deutsche, 81.
 Hancock, 82.
 Wright, 84.
 Forster, 84.
 Wright, 97.
 Haines, 101.
 Radley, 103.
 Meyer, 103.
 Jennings, 104.
 Froggart, 113.
 Ayokbourn, 120.
 Whinery, 121.
 Sorel, 317 (*Appendix*).
 Assanti, 133.
 Rimmel, 133.
 Cornides, 139.
 Whiteman, 143.
 Tomlinson, 145.
 Job, 145.
 Parkes, 157.
 De Clippelle, 177.
 Wright, 184.

Waterproofing—cont.

Henson, 191.
 Wilson, 195.
 Newton (*La Forge, Merwin, Bray, Prask*), 216.
 Brooman (*Duhoussett, Thomas*), 228.
 Menard (*Rehn*), 231.
 Stenhouse, 244.
 Stenhouse, 245.
 Newton (*Elmer*), 250.
 Lloyd, 263.
 Gilbee, 267.
 Stenhouse, 277.
 Harton, 283.
 Abel, 283.
 Miller, 292.
 Newton (*Gibson*), 294.
 Baxter, 311.
 Johnson, 312.
 Gale, 312.

White leather :

Fearn, 6.
 Gray, 6.
 Moody, 43.

Yellow leather :

Green, 3.
 Samuel, 7.

 E R R A T A .

Page 100, line 10, the quotation should end at the word "articles."

Page 100, line 13, *for* "fluid" *read* "liquid."

Page 118, last line but one, *for* "13,800" *read* "13,808."

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- | | |
|--|--|
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B. WOODCROFT.

July 10, 1871.

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